

JULY, 1949

# CHEMICAL PROCESSING

PREVIEW  
*The Magazine of  
PROCESSING, ITS CONTROL AND DEVELOPMENT*

## Highlights

of this issue's 224 articles

... 224 articles of developments in processes, techniques, materials, equipment

\* Starch Separation Time Now 20 Seconds Instead of 12-24 Hours ...

Centrifugal filters operate continuously to remove protein water and "brown starch" ... 6

\* Fabric Coating with Plastisols Saves Time; Avoids Use of Flammable, Toxic Solvent ...

Custom coater uses fewer passes on coating machine, reduces mixing time, conserves storage space with 100% solids material ... 14

\* Cut Unloading Time from 24 to 3 Hours per Car when Carton Shipments Are Palletized ...

Paper mill utilizes existing truck equipment to best advantage under centralized rather than departmental control ... 30

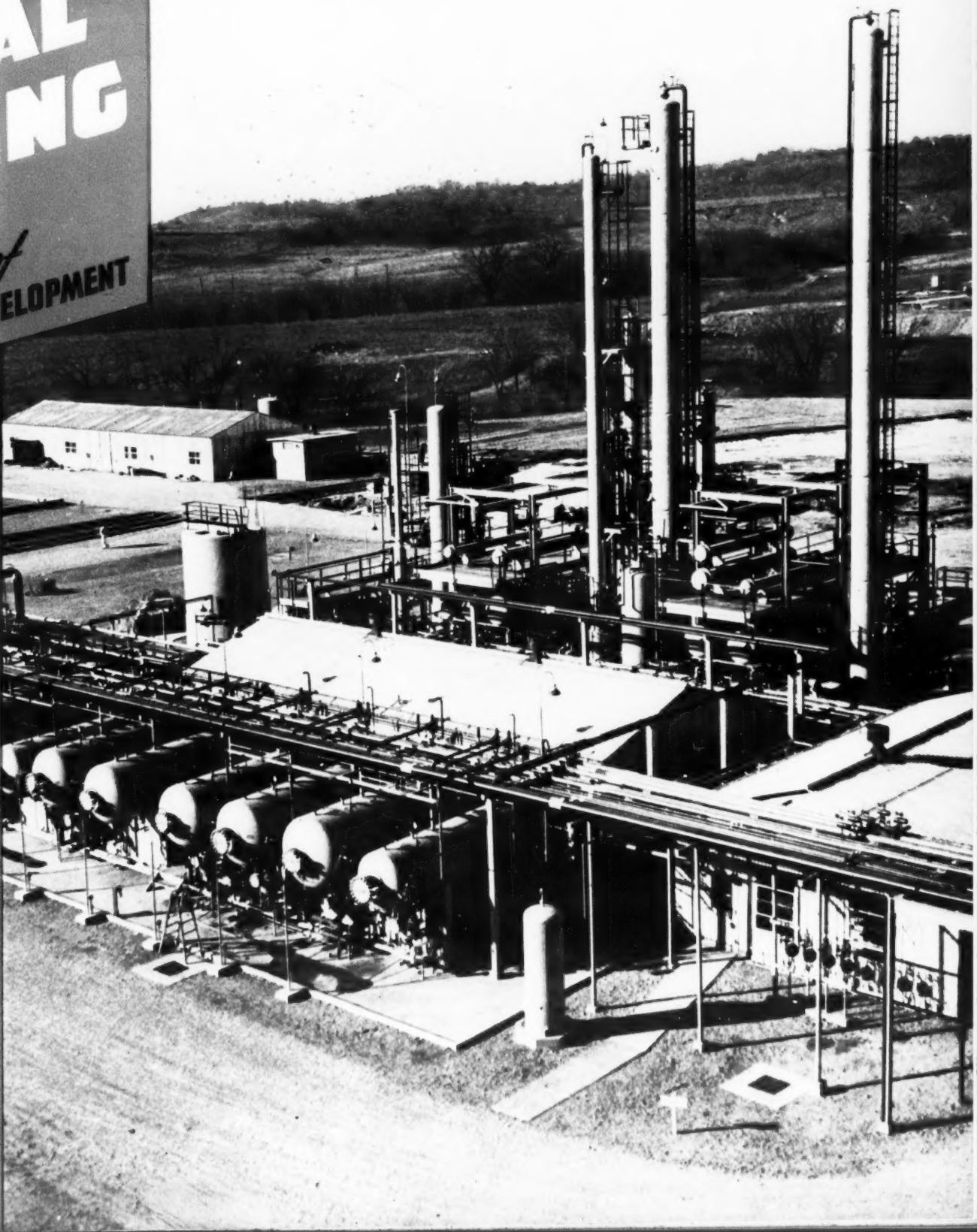
\* Electronic Method Analyzes Vibration and Noise ...

Used in checking machinery, fluid flow, gas expansion in refrigeration coils, air and water leaks, etc. ... 44

(Continued on page 4)

### THE COVER PICTURE

\* Demonstration plant makes gasoline from coal by Bergius process ... hydrogenation products are separated, refined and stabilized in this distillation unit ... Page 56



"That's Interesting"

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**Pump impeller and housing design eliminate all fluid friction**

A new midget circulating pump is said to have impelling capacity 50-200% greater than other pumps of like hp. This is because the design of its impeller and housing gets rid of all fluid friction. Its 1-30 hp electric motor gives it a capacity that ranges from 11 gallons of water per minute at no head to nearly 4 gpm at 10-ft. head.

Besides developing new, more efficient design, the makers achieved corrosion-resistance, constructing the completely-enclosed impeller and housing of a special heat-and-corrosion-resistant plastic.

Case, mounting-plates and supports are made of Monel. Pump is a development of Broadbent-Johnston, Inc., El Monte, Cal. (As reported in "Mechanical Topics," International Nickel Co., Inc., New York, N. Y.)

## Rub-a-dub-dub — a flexible tub!

A flexible tub that squeezes clothes dry under vacuum pressure is a feature of a new, low-priced washer, recently introduced by Beldix Appliances, Inc. The tub is made of a material called metalloc, manufactured by General Tire & Rubber Company.

## Small dehumidifiers weigh only 20 and 46 lbs.

Automatic, electrically-operated dehumidifiers are offered in two small units weighing only 20 and 46 pounds respectively. Savings of over 55% total weight, over other types, are achieved by aluminum-sheet construction. They use Alcoa activated alumina as drying agent.

A wide range of commercial applications includes testing laboratories, preservation of machine tools and precision parts, and preservation of all manner of material in storage where the maintenance of a low dew point is essential. Units are made by Dry Air Products Corp., 734 Jackson Place, N.W., Washington, D. C. (As reported in Alcoa Aluminum News-Letter.)

## Aids tiering pallet loads of wire cloth

Handling of wire cloth on pallets, in plant or warehouse operations, can be made easier by means of an idea suggested by Carl Johnson of Hibbard, Spencer, Bartlett & Co., Chicago, Ill. A shell, consisting of 2 x 4's with proper bracing, is placed over the rolls when they are standing on end on pallets. This provides better bases for the next pallet and eliminates tying the rolls.

(Continued on third cover)

For more information on product at left, specify CP 1951  
see information request blank between pages 2-3.

As you read this issue, if you want more information on processes, controls or developments of products discussed herein . . .

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As you read articles or advertisements which interest you, on which you'd like more information . . . note key number under each. Check back to this sheet . . . verify the key number here by name of product discussed . . . check space provided. Fill in your name, title, company, main product and address on reverse side of this sheet and mail to publisher's Readers Service Dept. Information will come to you direct, without obligation.

✓ Key	Description	✓ Key	Description	✓ Key	Description	✓ Key	Description
1951a	Methyl Parasept	1969b	beta-Dithiocarbamylpropionic Acid	2046	Fork-lift Roller Unit	2105	Leak Detector & Sampling Probe
1951b	Ethyl Parasept	1989c	beta-Isothiocureidopropionic Acid	2047	Elevating Boom Truck	2106	Reflectometer
1951c	Propyl Parasept	1990	Vinyl Flooring	2048	Lift Trucks & Tractors	2107	pH Electrodes
1951d	Butyl Parasept	1991	Paint Additive Resins	2049	Trailers	2108	Dial Thermometers
1951e	Benzyl Parasept	1992	Vulcanized Starches*	2050	Belt Conveyor-elevators	2109	Thermocouples
1952	Combustion Tubes	1993	Emulsion Stabilizer	2051	Scrap Truck	2110	Microscope
1953	2-Stage Air-cooled Compressors	1994	Metal Repair Alloy	2052a	Platform Skids	2111	Electric Furnaces
1954	Wetting Agents	1995	Acetonitrile	2052b	Platform Hand Truck	2112	pH Indicators & Recorders
1955	Centrifugal Filters	1996	Primary Rubber Accelerator	2053	Multivall Bags	2113	Liquid Level Controllers
1956	Clad Steel	1997	Phenolic Molding Powder	2054	Lightweight Roller Conveyors	2114	Welding Electrodes
1957	"Corrosion of High-nickel Alloys"	1998	Vinsol (Solid Resin or Solution Form)	2055	Worm Gear Speed Reducers	2115	Film Applicator
1958a	Flame Arrestors	1999a	Paradichlorobenzene	2056	Platform Conveyor Chains	2116	"Scientific Apparatus & Methods"
1958b	Swing Line Equipment	1999b	1,2,4-Trichlorobenzene	2057	Gas Fork-lift Trucks	2117	Air-cooled Distribution
1958c	Internal Tank Valves	1999c	Monochlorobenzene	2058	Viscous Material Pump	2118	Transformers
1958d	Pressure Relief Valves	2000	"Nylon"	2059	Wood Tanks	2119	Water Stills
1958e	Still Type Valves	2001	Bearing Lubricant	2060	Roller Chains	2120	Diaphragm Motor Valves
1958f	Vacuum Relief Valves	2002	Polyester Plasticizer	2061	Hand Trucks	2121	Liquid Soaps
1958g	Vent Valves	2003	Woven Wire Cloth	2062	Portable Plastic Roller Conveyor	2122	Clean Gas Generators
1958h	Vent Units	2004	Para-tert-amylophenyl	2063	Handling Buckets	2123	Pulverizers
1958i	Pressure Relief Vents	2005	Flake Formaldehyde	2064	Storage Bins	2124	Pneumatic Conveyors
1959	Drum Dryers	2006	Weed Killer	2065	Screw Conveyors	2125	Portable Mixers
1960	Corrosion-resistant Pumps	2007	Corrosion-resistant Resin	2066	Stainless-steel & Heat-resistant Sheets	2126	Isocyanates
1961	Sulfuric Acid Dilution	2008	Chlorinated Hydrocarbon	2067	Die-handling Trucks	2127	Stainless Steel Fabrication
1962	Corrosion-resistant Coating	2009	Corrosion Protection	2068	Trucks & Gripping Forks	2128	Nitrogen
1963	"Application Ideas"	2010	Cation Exchange Resins	2069	Liquid-line Magnetic Separator	2129	Tumbling Blenders
1964	"Crotonic Acid"	2011	Methocel	2070	Steel Strapping	2130	Expansion Joints
1965	Conveying Systems	2012	Palmitic Acid 80	2071	Jacketed Pipe & Fluidometer Systems	2140	Mechanical Sealing Device
1966	pH Apparatus	2013	Interior Finish	2072	Fintube Tank Suction & Line	2141	85% Magnesia Insulation
1967a	Motors	2014	Surface-coating Resins	2073	All-metal Thermometers	2142	Gas Pump Applications
1967b	Sheaves	2015	Paraformaldehyde	2074	Liquid Meters	2143	"Fume Washers"
1967c	Controls & Control Systems	2016	Fiberglas Pipe Wrap	2075	Vibration & Noise Detectors	2144	Organic-silicon Chemicals
1967d	Coupled & Integral Pumps	2017a	60% Chlorophene	2076	Photoelectric Colorimeter	2145	Ground Anodes
1968	Ratiosleeve	2017b	40% Taxaphene Concentrate	2077	Adjustable Leck for Vacuum Control	2146	"Plastic Reinforcement"
1969	Aconitic Acid	2018	Plasticizer	2078	Oscillograph	2147	"Nitrally"
1970	Stainless Steel Sheet & Strip	2019	Chemicals*	2079	Auto Selector	2148	"5 New Laboratory Instruments"
1971	Liquid Weight Gauge	2020	Cation Exchange Resin	2080	Temperature Controllers	2149	"Patent Law"
1972	Freight Ladder	2021	Wood Cellulose	2081	Electronic Level Controls	2150	Radioactivity Instrumentation
1973	Post Resin	2022	Silicone Rubber	2082	Combustible Gas Detector & Safety Controller	2151	Synthetic Organic Chemicals
1974a	Allyl Starch in Lacquer Solvent	2023	Aluminum Anti-rust Paints	2083	Steam Traps	2152	Dust Collectors
1974b	Allyl Starch in Ethanol	2024	Matting	2084	Severe Service Thermometers	2153	Humidity Control
1974c	Allyl Starch in Toluene-isobutanol	2025	Cast Iron Filler Solder	2085	Radioactivity Instrumentation	2154	Chromium-iron
1974d	Allyl Starch Baking Formulation	2026	Glycerine Date No. 13	2086	Hazardous-location Timer	2155	Hydraulic Cells
1975	"Colloid Chemistry"	2027b	Glycerine Date No. 14	2087c	Strip Chart Recorder	2156	"Flame Hardening"
1976	Fatty Acids	2027c	Glycerine Date No. 15	2088	Condensed Catalog	2157	Work Gloves
1977a	b-Carboxyethyl Benzothiazyl-2-sulfide	2027d	Glycerine Date No. 16	2089	Controllers	2158	Heat Transfer Equipment*
1977b	b-Dithiocarbamylpropionic Acid	2028	Fork Truck Cylinder Carrier	2090	Vacuum Pressure Regulator	2159	Woven Wire Conveyor Belts
1977c	b-Isothiocureidopropionic Acid	2029	Electric Trucks	2091	Silent Check Valve	2160	"Corrosion Inhibition with Chromate"
1978	Gum Rosin	2030	Booster Conveyors	2092	Gauge Illuminators	2161	Diamond Grinding Wheels
1979	Protein Fiber	2031	Dump Truck Bodies	2093	Temperature Transmitter	2162	Mobile Elevators & Cranes
1980	Surface-active Agent	2032	Electric Hoists	2094	Dial Thermometers	2163	Crushers, Pulverizers & Granulators
1981	Catalyzed Sodium Sulfite	2033	Lift Trucks	2095	Sheaves	2164	Acid-handling Pump
1982	Pure Latex Laboratory Tubing	2034	Adjustable Loading Ramp	2096	Lab Rotameter Set	2165	Safety Tools
1983	Insulating Firebrick	2035a	Storage Battery Maintenance	2097	Pyrometers	2166	Wet Grinding Mills
1984	White Oils	2035c	Electric Tractors	2098	Time-temperature Controller	2167	Battery Chargers
1985	Stabilizer for Vinyls	2035b	Electric Lift Truck	2099	Static Pressure Controls	2168	Dust Collector
1986	Vinyl Coatings	2035c	Electric Pallet Truck	2100	Flow Meters	2169	Cutters
1987	Sodium Tripolyphosphate	2036	Lightweight Elevator Conveyor	2101	Condensate Drainage Control	2170	"Prufoot Proof Packet"
1988	Metal Filter Cloth	2037	Conveyor Systems	2102	Steam Generators	2171	Floatless Liquid Level Controllers
1989a	(Benzothiazyl-2)-carboxyethyl Sulfide	2038	Fork Trucks	2103	Oil Burner Combustion Safeguard	2172	"Eutectic Welder"
		2039	Fork-truck Unloaders	2104	Heavy-Duty Casters	2173	"Magnetic Motor Control"
		2040	Bagging Scales	2041	Pneumatic Conveyors	2174	Precision Carbon Determinator
		2041	Belt-Roll & Wheel Conveyors	2042	Continuous Tubular Conveyor	2175	Diaphragma Slurry Pump
		2042		2043	Hydraulic Lift Trucks	2176	Sifters

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Additional items on reverse side

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2178	Turbine Agitators	2224	Downblow Unit Heaters	2228	Chlorinator	2339	Lithium Compounds*
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2188	Low-voltage Switchgear	2244	Perforated Screens	2298	Hydraulic Boost Pump	2348b	Plastic Fittings & Pipe
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2223	Wire Connectors	2275	Cartridge Heaters	2330	High Pressure Valves	2380A	Live Centers
2224	Filter Cloth	2276	V-belt	2331	Rotary Feeders	2381	Rolls
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2230	Fittings, Pipe & Valves	2282		2337	Tantalum Processing Equipment	2387	Plastic Floor Patch
2231	Diaphragm Pumps	2283		4th Cover Process Pumps	2388	Processing Equipment*	

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## ... then specify ALCOA Alumina for refractories and refractory porcelains

The single-barrel, double and multiple-barrel porcelain tubes, illustrated above, are used as combustion tubes, pyrometer protection tubes and high temperature thermocouple insulators. The manufacturer can guarantee them for temperatures as high as 2900° F., because they are fortified with ALCOA Alumina.

The higher the ALCOA Alumina content in porcelains such as these, in refractory brick and other high-temperature ceramics, the better the performance. Why? Because ALCOA Alumina gives refractories and other

ceramics these outstanding qualities:

- High strength and better stability under load at high temperatures.
- Lower coefficient of expansion.
- High resistance to both thermal and mechanical shock.
- Negligible porosity and shrinkage.
- Better resistance to spalling at high temperatures.
- Better resistance to corrosive slags and gases.

These performance characteristics increase as the ALCOA Alumina content increases!

We do not make refractories or other kinds of ceramics, but we'll gladly tell you how the use of ALCOA Alumina will better the performance of the ceramic products you manufacture or use. Write to: ALUMINUM COMPANY OF AMERICA, CHEMICALS DIVISION, 1465 Gulf Building, Pittsburgh 19, Pa.

The high-temperature refractory porcelains, illustrated above, are manufactured by McDaniel Refractory Porcelain Co.



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When inquiring check CP 1952 on handy form, pgs. 2-3



CP Two-Stage Air-Cooled Compressor—Class PM



CP Two-Stage Air-Cooled Compressor—Class PB

## compressed air *anywhere* — without waste

In many large and medium sized plants air is needed in isolated locations. These small, compact CP compressors may be installed independently of the main air system, dispensing with long air lines. They are also ideal for off hour operations.

In smaller plants, the entire air requirements may be met most economically with these small, efficient compressors.

Built to the same high standards as the large CP compressors, Class PM two-stage air-cooled compressors are available in sizes from 139 to 445 c.f.m. piston displacement, with built in motor (as illustrated) and with flexible coupling or V-belt drive.

Class PB-20 Compressors are available in three sizes: 7½, 10 and 15 HP, with piston displacement ranging from 39 to 82 c.f.m. Illustrated is the tank-mounted type.

*Write for complete information.*



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## Highlights

(Continued from front cover)

These articles have been selected by the Editors as having unusual interest

- ★ Prevention of Corrosion in Soap Boiling Kettles Keeps Product Pure, Color-true . . . Top rings of nickel-clad steel, 5' high, stop metallic pickup stemming from attack on walls at liquid-air level . . . 6
- ★ Proportioning of Slush Stock Closely Controlled in Paper Mill . . . Integrated system uses "field-built" flow meters for holding ratio of sulphite to groundwood and broke . . . 10
- ★ Charges Enamel-mixing Tanks in 50-75% Less Time; Cuts Fire Hazard . . . Gauge shows weight of each ingredient as it is added by pipeline from storage, ball mill . . . 12
- ★ Allyl Starch Coatings Resist Heat and Solvents . . . Company making starch semi-commercially, offering it in solvents or as special baking formulation . . . 14
- ★ Stabilizes Emulsions of Many Kinds . . . Highly effective material forms permanent complexes with polyvalent ions to prevent their precipitation . . . 20
- ★ Paraformaldehyde Bids for Place in Thermosetting Resin Field . . . Short-chain formaldehyde polymer from new process holds less than 10% water, dusts less . . . 27
- ★ Cheaper to Move Ammonia Cylinders by the Dozen with Fork Truck and Carrier Attachment . . . One man replaces 9 in transferring containers from filling to storage and then loading on highway truck . . . 30
- ★ Gravity or Power Feed Used in High-speed Bag-filling with Duplex Scale . . . Normal range is 5-25 lbs. and 25-50 lbs.; unit is entirely enclosed and explosion-proof . . . 35
- ★ "Packaged Laboratories" for Radioactivity Counting or Research . . . Integrated groups of instruments facilitate precise analysis, monitoring, counting, etc. . . . 46
- ★ Films Put Down by Applicator Are of Known Thickness . . . Clearance, read directly on scale, can be adjusted quickly while applying coating . . . 54
- ★ U. S. Bureau of Mines Starts Production of Synthetic Fuels in Missouri . . . First of two plants making gasoline from coal is now running; operating data will be invaluable for new industry . . . 56
- ★ Steam Generators Develop Full Working Pressures in 2 Min. . . . Special coils, made of 300 ft. of seamless pipe, are tested at 1200 psi . . . 74
- ★ Accurate, Automatic Sampling of Wet or Dry Materials in Continuous Processes . . . Automatic sampler takes uniform sample cuts in intervals ranging from 5 to 60 min. . . . 74
- ★ Air Purifier Permits Saving 2.5 Tons Refrigeration per Hr. . . . Lightweight 24" units require minimum duct accommodations; design features large filtering area . . . 79

★ **Cold Moisture Layer No Bar to Permanent Ink Mark** . . . Stamp-pad ink dries smudge-free within 30 seconds; mark sticks tightly on thawed containers ..... 90

★ **Pump Handles Any Corrosive, without Glands, Gaskets or Check Valves** . . . Body and rotor of positive displacement unit furnished in any corrosion-resistant material ..... 97

★ **Refrigerating Machine Uses Low or High Pressure Steam for Air Conditioning** . . . Plain water is refrigerant, salt is absorbent; all impractical and toxic features of ammonia avoided ..... 98

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#### Over 30,000 Circulation in Chemical Process Plants

Chemical & Allied Products	Food Products	Public Utilities, Consultants, Govt.
Coke Oven Products	Leather Tanning	Rubber Products
Composition Materials, Fiber, etc.	Lime & Cement	Metallurgical, etc.
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Drugs, Cosmetics & Pharmaceuticals	Paper and Pulp	Stone, Clay & Glass Products
Fertilizers	Petroleum Refining and Products	. . . and allied Lines (Carbon, Glue, Oils, Tobacco, etc.)
	Plastics, Cellulose, Rayon, etc.	

JULY, 1949



WATER SPOTS caused by humidity, in the varnishing of rubber footwear, may be eliminated through the use of small percentages of AEROSOL OT in the varnish.



QUICKER DOUSING of fires in materials difficult to wet, such as bales of cotton or mattresses, is achieved with the aid of AEROSOL Wetting Agents.

## Shorten processing time and improve product performance with AEROSOL\* WETTING AGENTS

If you have processes or products in which fast wetting action is essential, specify AEROSOL Wetting Agents, the most powerful available.

You will find them remarkably effective in bringing about intimate contact when added to water, oils or surface coatings. They may be used to increase spreading action . . . aid penetration . . . regulate characteristics of precipitates . . . increase reaction rates between immiscible liquids . . . and perform other tasks quickly and at low cost.

The illustrations here merely indicate some of the many fields in which these products have found uses. These may suggest other applications in *your* business where they can be employed profitably. AEROSOL Wetting Agents are available in a number of types to meet the wide variety of requirements.

\*Reg. U. S. Pat. Off.

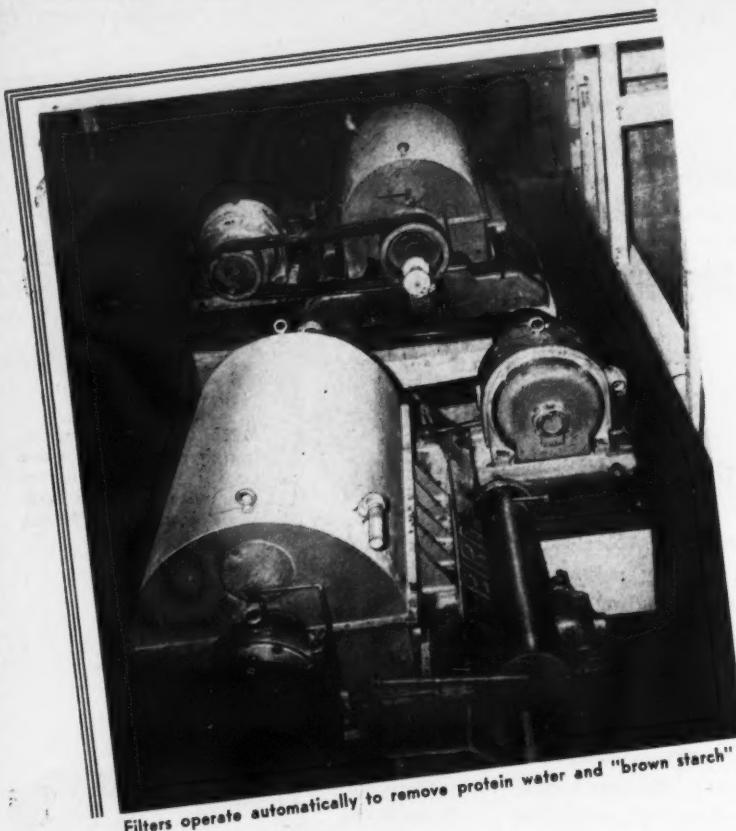
Descriptive, detailed booklet will be sent on request.

METAL SURFACES, including silverware, are more rapidly and efficiently cleaned with metal polishes containing AEROSOL Wetting Agents.

SPEED UP of bottle washing in bottling plants is now being effected with AEROSOL Wetting Agents used in conjunction with the usual caustic soda wash.



When inquiring check CP 1954 on handy form, pgs. 2-3



## Starch Separation Time Now 20 Seconds Instead of 12-24 Hours

Centrifugal filters operate continuously to remove protein water and "brown starch"

Another fault of this latter process was that recovery fell short of the high percentage desired, and there was a lack of product uniformity.

**Solution:** Continuous centrifugal filters were installed to replace the settling and decanting equipment. These are completely housed and dust and dirt cannot contaminate the product. In operation, the feed slurry passes through a stationary feed pipe to the conveyor hub from

which it is delivered to the revolving bowl, which is in the shape of a truncated cone. A screw conveyor rotates inside the bowl at slightly lower speed, in the same direction of rotation. The solids are steadily moved forward by the conveyor as fast as deposited, being carried above the level of the filtrate for an interval before leaving the bowl. This permits maximum drainage.

Adjustable filtrate discharge ports are so located in the large end of the bowl that the level of liquid is maintained at the desired height. Discharge of both solids and filtrate is continuous.

The differential rotation between conveyor and bowl,

obtained by quiet, compact gear drive, has no effect on the settling of solids against the walls of the bowl. Separating forces range up to 1000 times gravity.

Wash liquors are carried into the filter through a pipe mounted inside the feed pipe. The wash is delivered through a series of nozzles located directly in front of the conveyor blades. The wash passes through the cake and toward the large end of the bowl, being discharged with the filtrate. Since the wash liquor and solids are travelling in opposite directions, this provides a counter-current wash. The operation requires no cloths, screens or other filter media. The filter operates continuously and automatically, requiring no attendance.

**Results:** Centrifugal filters whisk starch out of protein water, handling a production of about 40 tons a day. In comparison to the old settling and decanting process separation takes place in less than 20 seconds instead of 12-24 hours.

Recovery is much closer to 100% and quality of production is improved and does not vary.

**Source:** Continuous filters are built by Bird Machine Co., Dept. CP, South Walpole, Mass. . . or for more information check CP 1955 on handy form, pages 2 and 3.

**PROBLEM:** Operations in Idaho starch plant followed the familiar practice of straining ground-up potatoes through a series of screens, down to 120 mesh, to remove the bulk of the fiber and some of the protein water and fine impurities. However, there still remained a high percentage of the protein water and "brown starch" to be removed. This required two or three-stage settling and decanting in large concrete tanks equipped with agitators. Separation by this method required 12 to 24 hours and involved an excessive amount of labor.

## Prevention of Corrosion in Soap Boiling Kettles Keeps Product Pure, Color-true

Top rings of nickel-clad steel, 5' high, stop metallic pickup stemming from attack on walls at liquid-air level

**PROBLEM:** Manhattan Soap Company, Bristol, Pa., planned to install some new soap boiling kettles. Based on experience, company engineers knew that carbon steel kettles were attacked at the liquid-air level, bringing about discoloration and contamination of product. However, the cost of kettles made from solid corrosion-resistant material was prohibitive.

**Solution:** Since corrosion was by far the most extensive at the liquid-air level, it was decided to use

corrosion-resistant material at this point. Twelve kettles were fabricated by Philadelphia Iron Works, using top rings of 10% nickel-clad steel. Each kettle measured 18'6" OD x 24'6" high, the top rings being 5'0" high.

The clad steel used in this application consists of a uniform thickness of nickel, 10% of total plate thickness, permanently bonded to steel backing plate. This type of construction provides the corrosion-resistance of



Top rings of these 12 soap boiling kettles are 10% nickel-clad steel



Interior view of kettle shows corrosion-resistant ring at top, 5' high

solid nickel at the lower cost of clad steel.

**Results:** As anticipated, the product comes out clean, color-true and pure. Top ring has proven able to resist caustic, hot fats or salt. By using clad steel rings instead of fabricating entire kettle from solid corrosion-resistant material, company realized important savings on its capital investment for the boiling kettles.

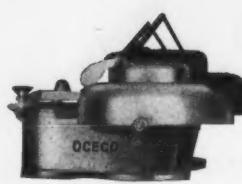
**Source:** Clad steels are made by Lukens Steel Company, Dept. CP, Coatesville, Pa. . . . or for more information check CP 1956 on handy form, pages 2 and 3.

#### Effect of sulfuric acid solutions on high-nickel alloys

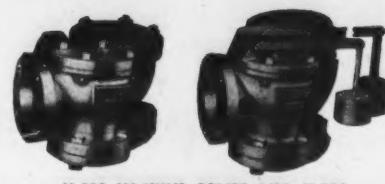
Comprehensive discussion of the results of many tests on 34 high-nickel alloys is given in 44-page bulletin. Metals evaluated include Monel, nickel, Inconel, Hastelloy alloys, nickel-iron alloys, ni-resistant alloys, special steels and certain stainless steels. Tests were conducted under many different conditions; effects of temperature, concentration, aeration, and velocity variations are illustrated in many graphs. Text and tables point out influence on corrosion rates of additives to acid solutions. Protective films formed by particular oils and by certain depositions are described, and unusually high resistance to corrosion exhibited by particular metals under specific conditions is detailed.

Thirty-three photographs and 86 tables supplement the text. Tech. Bul. T-3, issued by The International Nickel Co., Inc., Dept. CP, 67 Wall St., New York 5, N. Y. When inquiring specify CP 1957 on handy form, pages 2 and 3.

JULY, 1949



**V-113 VENT VALVES** control tank breathing, minimizing vapor losses and deterioration of product. High flow capacity. 2" to 12" sizes.  $\frac{1}{2}$  oz. to 8 oz. pressure or vacuum settings.



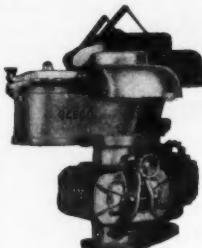
**V-103 VACUUM RELIEF AND V-106 PRESSURE RELIEF VALVES** are furnished in 3", 4" and 6" sizes. Vacuum settings from  $1\frac{1}{2}$  oz. to 1 lb. per sq. inch. Pressure settings from 2 lbs. to 30 lbs. per sq. inch. Working temperatures up to 600° F.



**V-114 INTERNAL TANK VALVES** are provided with a fusible link that melts when subjected to fire, closing the valve instantly, and cutting off the flow from the tank. 3", 4", 6", 8" and 10" sizes.



**TYPE "E" FLAME ARRESTORS** can withstand long exposure to fire. The "banks" have vertical straight through passages—minimizing entrainment and pressure drop, and are "extensible" for easy cleaning. 2" to 10" sizes.



**TYPE "BE" VENT UNITS** consist of a V-113 Vent Valve with snuffer, mounted on a Type "E" "Extensible" Bank Flame Arrestor. 2" to 10" sizes. Unsurpassed for efficiency and reliability.



**V-109 STILL TYPE VALVES** combine vacuum and pressure relief in a single valve. 3", 4" and 6" sizes. Pressure settings from 2 to 25 lbs. per sq. inch. Vacuum settings from 1 oz. to 10 oz. Temperatures up to 600° F.

## OCECO FITTINGS

### Prevent VAPOR AND FIRE LOSSES

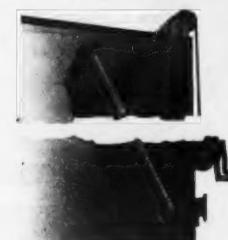
• Oceco Vents eliminate the free discharge of vaporized liquids. They control tank breathing resulting from temperature changes and pumping — protect the quality of the stored product — and prevent "blow-outs" and "cave-ins". Oceco Flame Arrestors are a positive flame stop — they prevent explosions and fires.

Specify Oceco Fittings throughout for all your tanks — and get proven, dependable, trouble-free protection for only a fraction of one per-cent of the value of the tank and its contents.

A few of the most popular Oceco fittings are illustrated and described briefly herewith. But send for the Oceco Data Sheets. They give full details and specifications, and complete listings of sizes, weights, dimensions, etc. Let the Oceco Engineers — pioneers in this work — help you equip your tanks for utmost safety and economy.



**V-108 EMERGENCY PRESSURE RELIEF VENTS** provide instant relief for excessive internal pressures, resulting from exposure fires, etc. Furnished in 6", 8", 10",  $1\frac{1}{4}$ " and  $20\frac{1}{2}$ " sizes.



**SWING LINE EQUIPMENT** — complete facilities including heavy duty tank nozzle; efficient double elbow swing joint; swing pipe; cable clamp; cable; sheave bracket and internal or external winch.



**SEND FOR THE OCECO DATA SHEETS.** Ask for sheets on the individual fittings in which you are most interested, or send for the complete set. WRITE TODAY.

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ENGINEERS  MANUFACTURERS

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When inquiring check CP 1958 on handy form, pgs. 2-3

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STOKES

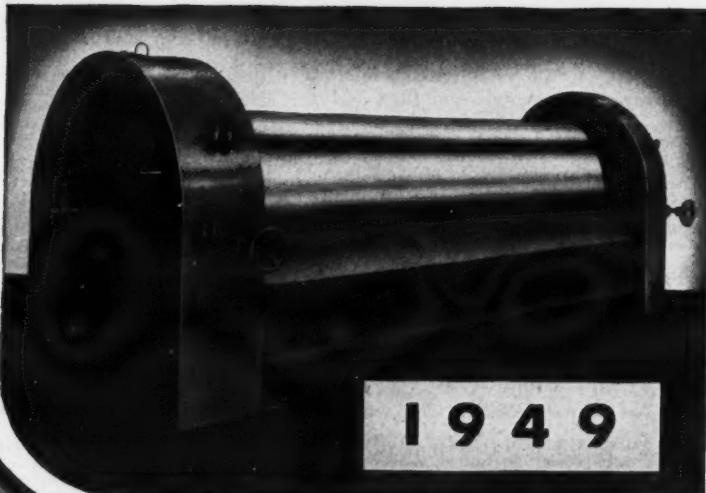
## TOPS thirty years ago STILL Tops today...

Back in 1919 Stokes drum dryers began to build a reputation. They embodied sound engineering... conscientious construction... dependable performance. Some of these old timers are still going strong.

Now, in 1949, Stokes continues to offer the best



### STOKES DRUM DRYERS



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# STOKES

KNOWS  
HOW

When inquiring check CP 1959 on handy form, pgs. 2-3

#### Wet ends of centrifugal pump Interchange for different corrosive services . . .

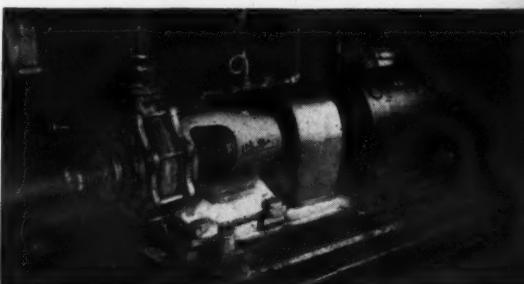
plant avoids replacing complete pumps in switch from hydrochloric to nitric acid

**Problem:** While a project was still in pilot stage a well-known manufacturer specified centrifugal Duriron pumps with wet ends of Chlorimet 2 for hydrochloric acid service in the proposed production plant. This material would have been satisfactory for use with that acid, but by the time the pumps arrived, the corrosive service had been changed to nitric acid. This, with addition of film aid, quickly corroded and eroded the Chlorimet 2 impellers.

**Solution:** Due to the foresight of the engineers of this company, it was not necessary to order new pumps for the production plant.

They had specified a type of pump whose wet-end parts are interchangeable. When it was obvious that Chlorimet would not give good service, wet-end parts were promptly replaced with a high-silicon iron alloy, Duriron.

Wet-end parts of pump are interchangeable



Installation of pump

**Results:** Change to the second alloy was made very quickly, and the Duriron parts have withstood the corrosion and erosion very successfully. Expense of a set of complete new pumps was avoided by sensing the possibility of change in corrosive service ahead of time and specifying pumps with interchangeable wet-end parts.

Entire line of pumps made by the pump manufacturer has the interchangeable feature, including new self-priming pumps now in production. Choice of 12 corrosion-resistant alloys covers practically all kinds of corrosive service.

**Source:** Pumps are made by The Duriron Company, Inc., Dept. CP, Dayton, Ohio . . . or for more information check CP 1960 on handy form, pages 2 and 3.

#### Quick, cool, efficient dilution of sulfuric acid

New catalog section describes complete system for producing cool, dilute sulfuric acid from the commercial strength acid. Karbate equipment features forced convection cooling and counter-current flow. Closed system operation requires no special pump for handling dilute acid. System is described as easily adaptable to automatic control.

Cat. Sec. M-8806A, issued by National Carbon Co., Inc., Dept. CP, 30 E. 42nd St., New York 17, N. Y. When inquiring specify CP 1961 on handy form, pages 2 and 3.

## Coating of Chloracetic Acid Pump Avoids \$135 Parts-replacement Every 8-10 Months

Polymerized resin adheres tightly to bronze casing and cover as corrosion-resistant layer

**PROBLEM:** Large chemical manufacturer found that bronze pumps used on chloracetic acid service lasted 8 to 10 months at the most. At the end of that time, entire casing curve, flat section of casing adjoining packing gland, and casing cover, where area under gasket was particularly bad, were all seriously pitted. Inasmuch as new parts for pumps were \$135, the company was very much interested in avoiding this replacement cost.

**Solution:** After one pump failed, it was cleaned with 2% hydrochloric acid and dried. When thoroughly dry, a thermosetting resin called Carbo-Fix was trowelled over pitted areas with a putty knife. In this case no primer was used, but special primer is usually required for satisfactory adhesion between metal and resin, especially if surface is not extremely rough and the metal is iron, steel or zinc.

Following the filling of pits and holes, a 1/64 to 1/32" film was left on entire surface. Parts were then dried for 2 days at 80°F. Gasket surface on casing cover was smoothed by large file. Coated parts were installed on same pump base, but with new impeller and shaft.

**Results:** Pump remained in operation for 10 months, at the end of which time the impeller and shaft were corroded. When pump was taken apart, inside surfaces of casing and cover appeared to be unaffected except for several places where small flakes of Carbo-Fix came off. It should be pointed out here that there were no solids in solution being pumped. Such solids might tend to wear away the coating faster than clear liquid.



Resistant coating is applied to pitted pump-interior

If the company had replaced the pitted parts with new ones it would have cost them \$135. However, the same end was achieved by using less than \$4 worth of Carbo-Fix. Actual working time required for the operation was about 3 hours.

Carbo-Fix is one of line of cements and coatings which are resistant to most acids, alkalis and solvents up to temperatures of at least 325°F. Neither evaporation nor oxidation is involved in formation of the hard coating; it is produced by polymerization at ordinary temperatures. Carbo-Fix is recommended for glass, concrete, rubber, porcelain, wood, brass, carbon, stainless steel, Haveg and silicon iron, besides bronze.

In general, all Carbo coatings flex very well. Elongation,



Here is pump back in line, ready to go

however, is usually limited to less than 1%. Heat transfer of Carbo-Fix with the standard carbon filler is 3.5 Btu/sq ft/hr/ft²/F. With special graphite filler, this figure increases to 40. All of these compounds keep indefinitely until mixed.

**Source:** Development of Carbo-Fix, Dept. CP, 7603 Forsythe Blvd., St. Louis 5, Mo. . . . or for more information check CP 1962 on handy form, pages 2 and 3.

### Solve design problems with pneumatic equipment

New booklet outlines 26 case histories of design problems and their solution by use of air motors, compressors, vacuum pumps, etc. Studies range from description of solution of problem which entailed feeding light material into automatic machinery, to discussion of simulation of automobile manifold vacuum conditions for testing of gasoline heaters and similar vacuum-operated accessories.

Bul. A-12, issued by Gast Manufacturing Corp., Dept. CP, Benton Harbor, Mich. When inquiring specify CP 1963 on handy form, pages 2 and 3.

### Commercial crotonic acid for molding polymers, other uses

Specifications, properties, and reactions of crotonic acid are set forth in 4-page, 2-color bulletin. Long in existence as laboratory curiosity, the acid is described as available in commercial quantities. Uses in molding polymers, in protective film formulation, in plasticizers, and in solvents, additives, etc., are discussed, and 44 references are given to the technical literature on crotonic acid and its derivatives.

"Crotonic Acid", issued by Tennessee Eastman Corp., Dept. CP, 10 E. 40th St., New York 16, N. Y. When inquiring specify CP 1964 on handy form, pages 2 and 3.



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IN this modern packing department the A-F Engineered Completely Coordinated Conveying System actually synchronizes operations and cuts packaging costs. On the top deck of the A-F Live Roller Conveyor, filled tote boxes come to the packers who remove the products and place them in the small boxes passing before them on the A-F flat-top Chain Conveyor. Empty tote boxes are returned for filling on the lower deck of the A-F Live Roller Conveyor (concealed by the top housing).

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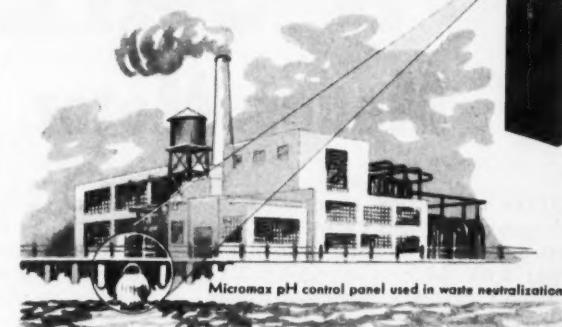
### CONVEYING EQUIPMENT

**Alvey-Ferguson**

METAL PRODUCTS CLEANING EQUIPMENT

When inquiring check CP 1965 on handy form, pgs. 2-3

### A "good chemical neighbor" policy can start at the sewer—



Micromax pH control panel used in waste neutralization

When waste treatment involves pH control, we can probably help a plant to engineer the regulating problem.

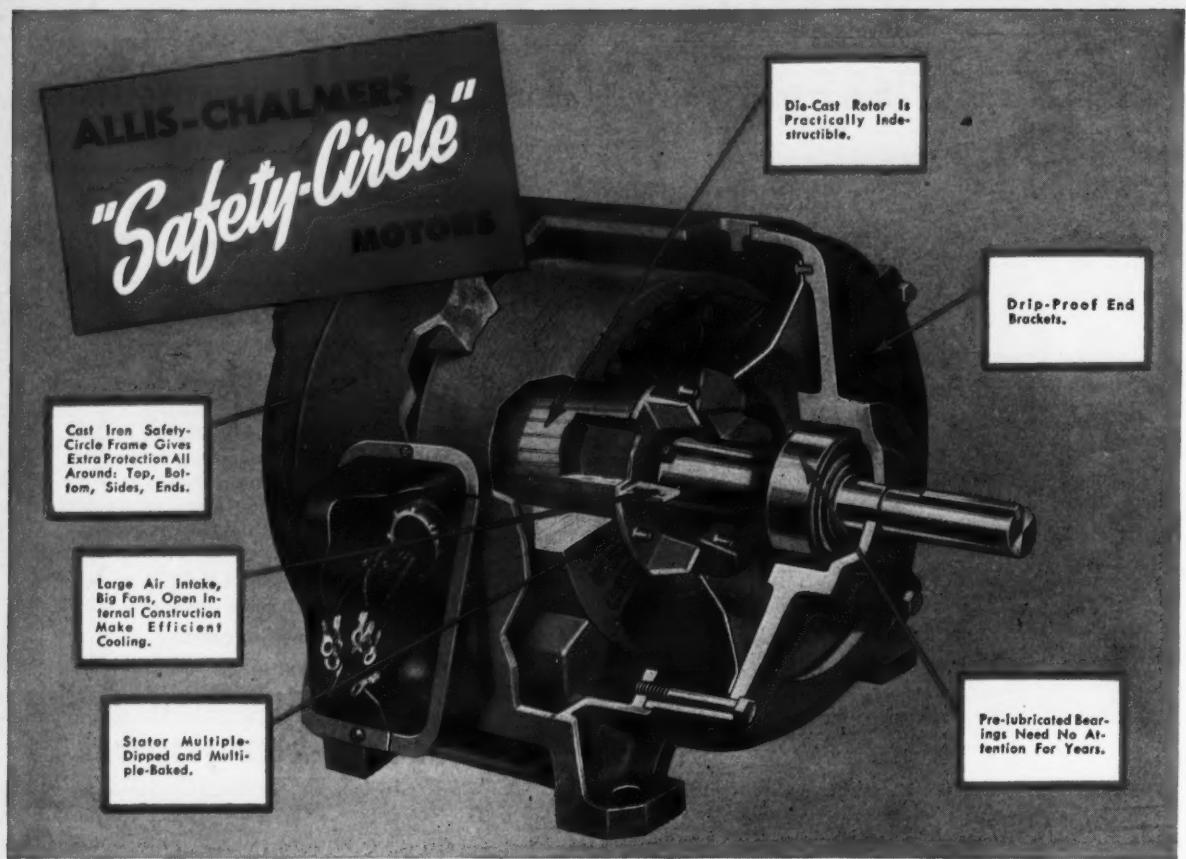
Our "controllability analysis", will tell you quickly whether your waste pH can be controlled automatically; takes only a few minutes of your time. Write for Bulletin ND44-96-708.



LEEDS & NORTHRUP COMPANY, 4995 STENTON AVE., PHILA. 44, PA.

Jrl Ad ND44-96-708(2A)

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# HOW SAFETY-CIRCLE Means Motor Dependability

**E**XTRA PROTECTION means extra dependability. That's why Allis-Chalmers protects the working parts of the motor with the exclusive SAFETY-CIRCLE. Compare this motor with motors of less rigid construction. The SAFETY-CIRCLE motor will not distort in mounting or under strain. And you get the extra protection of drip-proof end brackets at no premium.

**EXTRA PROTECTION INSIDE, TOO**  
Stator is multiple-dipped and multiple-baked in special insulating varnish. Rotor is die-cast aluminum. Stator is mounted in four longitudinal ribs which leaves

plenty of air space between stator and frame. Large fans cast integrally with the rotor and ample air intakes keep temperatures well within rated limits. *Ball bearings are factory-lubricated and require no further attention for years.*

When you shop for motors, remember SAFETY-CIRCLE gives you *extra protection, extra dependability and lower operating costs.*

For details on SAFETY-CIRCLE advantages, see your A-C Authorized Dealer or Sales Office or write for Bulletin 51B6210B. Sizes 1 to 20 hp, 326 frames and smaller. *Safety-Circle, Texrope and Vari-Pitch* are Allis-Chalmers trademarks.

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MILWAUKEE, WIS.

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# ALLIS-CHALMERS

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**TEXROPE** — Belts in all sizes and sections, standard and Vari-Pitch sheaves, speed changers.



**PUMPS** — Integral motor and coupled types. Sizes and ratings to 2500 GPM.

## NEW SOLUTIONS of processing problems

### Proportioning of slush stock closely controlled in paper mill . . .

integrated system uses "field-built" flow meters for holding ratio of sulphite to groundwood and broke

**Problem:** Because of poor metering accuracy of equipment for proportioning slush stock in newsprint paper mill, process was not as economical as it could be.

When amount of groundwood stock became too large in relation to sulphite stock, the paper sheet was weakened and broke on machine. On the other hand, when sulphite stock content of sheet went too high, the paper became unnecessarily expensive and strong. As is known, sulphite stock adds strength to sheet, but is about twice as expensive as groundwood stock; hence, its ratio in the sheet should be kept as low as practicable.

Type of equipment being employed was one of the familiar variations of a "compartment" meter similar to a water wheel with sealed ends. Operation is based on volume measurement, each revolution being totalized on mechanical counter. Constant level must be maintained in the open feed flumes to assure full, but not overflowing measuring compartments.

Leakage in this equipment was a troublesome factor, each compartment being "sealed" against end walls with rubber wipers. Made of wood with metal fittings, the bulky apparatus required extensive maintenance. Proportioning was accomplished through mechanical linkages and gear trains, adjustment of ratio setting being arbitrary and lengthy.

**Solution:** The system now being used for mixing the stock makes use of several instruments, the most recent of which is the Ratosleeve, a variable-area type flow meter. This unit is made up of a series of metering parts which are assembled in ordinary pipe fittings at point of application, to form complete metering system.

In operation, flow passes upward through metering sleeve past metering float — the only moving part. Float moves up and down in proportion to flow rate. Flow reading is made by observing position of indicating float extension or, as in this case, a pneumatic transmitting system may be connected for control and recording purposes.

With sulphite stock as the wild flow, Ratosleeves are used to proportion flows of groundwood stock (80-85% of the finished paper) and broke, through use of control valves operated by recording-totalizing ratio controllers.

Flows of alum, color and clay suspensions are proportioned to the sulphite flow in a similar manner, except that Flow-rator Meters are used instead of Ratosleeve instruments.

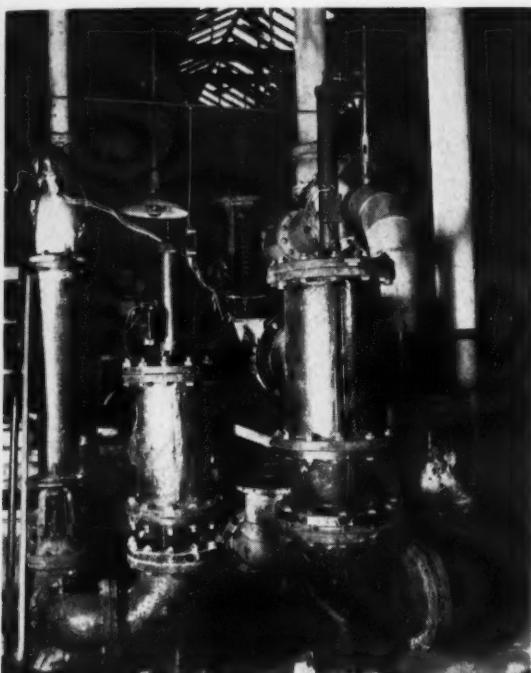
Mixed stock is dropped into a "mixed stock chest" having about 20 minutes holding time, where it is further agitated and blended. From there it is pumped directly to the paper machine as "furnish." On suction side of fan pump, recirculating white water is introduced for diluting mixed stock before hitting paper machine wire. Liquid levels of both broke and mixed stock are controlled. Volume of broke is recorded and totalized.

Feeding of mixed stock to paper machine is under "Basic Weight" control. Weight of the stock fed is adjusted automatically to the speed of machine so a constant-weight sheet is obtained despite machine-speed variations. This is done by tying speed into a ratio controller through a transmitting tachometer. Here too, a Ratosleeve instrument is used in the delivery line to the machine.

Illustration shows temporary installation of two Ratosleeves. The larger carries groundwood; the smaller sulphite. Each meter has an overhead electrical extension.

provided with purge meters. Floats and sleeves are 304 stainless steel for prevention of slime and pitch accumulations.

If sulphite flow fails, groundwood flow instantly shuts off automatically, and alarm notifies operator. If groundwood flow fails, alarm sounds, but sulphite flow continues. In this way, breaks due to high groundwood content are avoided. No damage, of course, is caused by a high-sulphite stock, but the higher-quality paper made is more costly. Automatic ratio control of groundwood flow is obtained by 8" butterfly type diaphragm-actuated control valve, with cast iron body and 303 stainless steel trim. Pressure drop at maximum flow is compatible with operating requirements. Valve is located to throttle discharge stream of centrifugal stock pump. There is no head tank or return line. Excellent control is obtained over entire flow range.



Temporary installation of Ratosleeves for proportioning groundwood stock to sulphite stock.

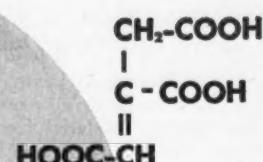
On groundwood flow, the Ratosleeve instrument has proven itself able to measure tons/day of dry stock, independent of concentration variations between limits of 2.6 and 3.0% consistency. Variations in fiber content of the slurry have exactly matched the variations in fiber drag on the float (within accuracy tolerance of its calibrations). Consequently, metering float responds directly to changes in fiber content as well as volume.

Results on sulphite calibrations are less encouraging. This material is more "greasy" and hasn't a linear coefficient of fluid friction with increasing consistencies.

Results: Close control of proportioning of slush stock has reduced breakage on machines from too high groundwood content. On the other hand, sulphite content is kept at the minimum desired for required strength and quality of sheet, and is not permitted to increase to an uneconomical value. Weight of sheet produced is constant in spite of variations in paper machine speed.

Source: Ratosleeve instruments and other control devices mentioned are made by Fischer & Porter Company, Dept. CP, Hatboro, Pa. . . . or for more information check CP 1968 on handy form, pages 2 and 3.

**NOW AVAILABLE...**  
in COMMERCIAL QUANTITIES



# Aconitic Acid

The only UNSATURATED TRIBASIC ACID On the Market

• Aconitic Acid, available until recently *only* in pilot plant quantities, is now available in commercial quantities and already is used in several important commercial applications.

#### POTENTIAL USES

Aconitic Acid offers many interesting possibilities in its unchanged form and as an intermediate for the preparation of other compounds. Specifically, Aconitic Acid is valuable in the preparation of sulfonated wetting agents. Makers of alkyd resins may find it useful in the preparation of these products. The esters of Aconitic Acid appear promising as plasticizers. Also useful for plasticizers because of their great stability are the esters of Tricarballylic Acid, made by the hydrogenation of Aconitic Acid.

#### TYPES OF REACTIONS

Aconitic Acid undergoes the usual chemical reactions of an organic acid. For example, Aconitic Acid will form:

1. Salts and acid salts.
2. Esters.
3. An Anhydride.
4. An Acid chloride.
5. A Triamide.

Although not extremely reactive, the double bond of Aconitic Acid will undergo reaction such as sulfonation and halogenation (with a mercuric sulfate catalyst). Heating dilute solutions of Aconitic Acid at 100° C yields Itaconic Acid.

#### PHYSICAL CHARACTERISTICS

Molecular Weight	174.11
Appearance	White Crystalline Powder
Odor	None
Melting Point	195°C. with Decomposition
Solubility in Water @ 25°C.	26.4 Gm./100 ml.
Solubility in Water @ 90°C.	110.7 Gm./100 ml.
Solubility in Ether	Sparingly Soluble
Solubility in Acetone	Soluble
Solubility in Lower Alcohols	Soluble — Increased solubility when hot.

For prices and detailed information on this new unsaturated tribasic acid write Chas. Pfizer & Co., Inc., 630 Flushing Ave., Brooklyn 6, N. Y.; 425 North Michigan Ave., Chicago 11, Ill.; 605 Third Street, San Francisco 7, Calif.



# PFIZER

Manufacturing Chemists Since 1849

**Charges enamel-mixing tanks  
in 50-75% less time;  
cuts fire hazard . . .**

gauge shows weight of each ingredient as it is added by pipeline from storage, ball mill

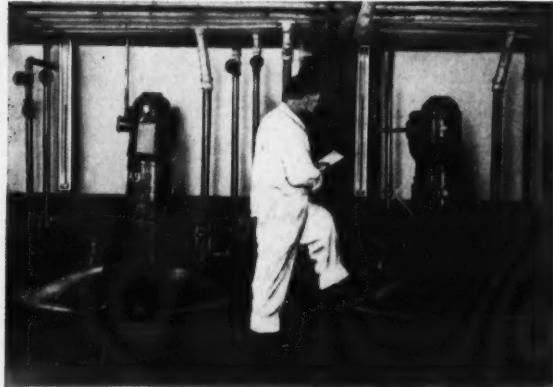
Problem: Charging of mixing tanks in enamel department of paint manufacturing plant was very slow and created a fire hazard. Material from ball mills and the oil and thinners were weighed into small tanks mounted on wheels, termed "buggies" by the paint men. These buggies were rolled to one of the weight-scale locations where pipes terminated from the various tanks containing the materials to be mixed.

Here they were filled with the proper weight of each ingredient and rolled by hand to one of the 33 mixing tanks, ranging from 500 to 3,500-gal capacity, where they were tipped up and drained through charging hole of tank. Many trips were required to charge the tanks to the proper weight of mix — it frequently required 6 or 7 hours to charge the 3,500-gal sizes.

Since thinners were moved through the plant and were charged by dumping into open charging hole in mixing tank, inflammable vapors were present in the atmosphere of the plant much of the time.

Solution: Each mixing tank has been equipped with a King-Gage and the piping system has been changed to run each of the pipes carrying the materials used above the entire series of mixing tanks. Valved lines lead off from main lines at each tank, and these branches connect into single line which goes into tank.

To charge tank, operator opens valve on one branch line and runs in that material until red column of gauge indi-



Gauges indicate pounds of various materials added to mixing tanks. These particular tanks have 500-gal capacity

cates that he has added the amount required by formula. He then shuts that valve and opens the next, running in that material until he has added the proper amount. Procedure is continued until all ingredients are in the mixing tank.

This type of gauge is calibrated to read poundage in the vertical tank directly. It is based on the U-tube. Unknown weight of liquid in tank is balanced against known weight of liquid in U-tube. With this type of arrangement, accurate weight of tank contents is indicated, regardless of specific gravity. Hence, one gauge suffices for all the materials that are added to one tank.

Results: Time required for charging tanks has been reduced 50 to 75%, with consequent reduction in departmental man-hours of approximately 20%. By keeping

# the end of horse and buggy day



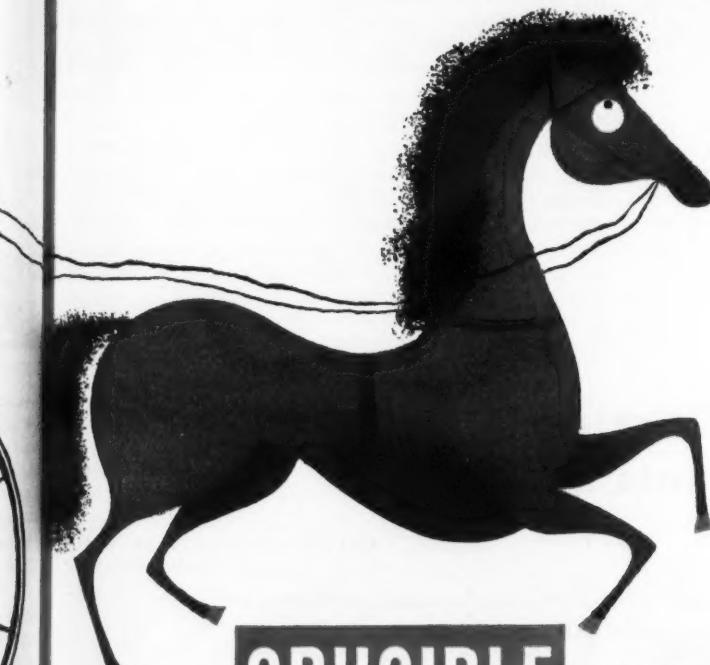
# ay for stainless sheet and strip

Automobiles were once designed as horseless carriages—even to the dashboard socket for a needless whip. Stainless steel production, too, once struggled thru horse and buggy thinking. More power, heavier rolls, more care in surface finish—and stainless sheet and strip came forth a step-child of carbon steel methods. Today's modern strip mills have changed this, giving stainless production new concepts of quality.

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This is more than merely another source of supply. For, with this new mill at the Midland Works and the Trent Tube Co. joining the organization, CRUCIBLE can now supply you with *every* form of stainless. And, in sheets, plates, strip, bars, tubing, forgings, wire and castings, you can rightly expect the best that modern facilities and generations of *specialty product* leadership can provide.

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When inquiring check CP 1970 on handy form, pgs. 2-3

## NEW SOLUTIONS of processing problems

charging hole covers closed and conveying materials directly from storage tanks through pipelines into mixing tank, without exposing vapors to mixing room, fire hazard has been almost eliminated.

Source: King-Gages are made by King Engineering Corporation, Dept. CP, Ann Arbor, Mich. . . or for more information check CP 1971 on handy form, pages 2 and 3.

### Saves 3-5 man-hours in loading truck . . .

freight ladder lowers merchandise from second floor to first; keeps loaders fresh, alert

Problem: Loading of truck with cases for shipment required 3 men working for 1 1/2 to 2 hours at the plant of an eastern manufacturer. These men carried merchandise from the second floor down some stairs to the truck. Such hard work left all 3 men pretty much exhausted at the end of the working day.

Solution: This company has recently acquired a freight ladder and applied it to loading work. On the 10' ladder



Typical application of power-operated freight ladder

is a load tray that moves up and down, being powered by electric motor at base of ladder. The unit raises 250 lbs at 25 fpm, and weighs 148 lbs. Tray folds into frame when ladder is to be stored. Ladder feet are equipped with locking wheels.

A hand-operated ladder is also available where there is no electricity. This 10' unit weighs only 46 lbs and carries up to 250 lbs up or down by turning of crank.

Results: With the ladder, 2 men load truck in about 20 minutes, and neither man is tired after job is finished. Thus, about 3-5 man-hours are saved on each truck-load of merchandise being shipped.

Source: The Tipp freight ladder is a product of Triangle Equipment Company, Inc., Dept. CP, 45 River Road, Nutley, N. J. . . or for more information check CP 1972 on handy form, pages 2 and 3.

### Fabric Coating with Plastics Saves Time; Avoids Use of Flammable, Toxic Solvent

**Custom coater uses fewer passes on coating machine, reduces mixing time, conserves storage space with 100% solids material**

**PROBLEM:** Although the American Finishing Company of Memphis, Tenn., was well satisfied with performance of vinyl organosols in custom fabric-coating work, technical men of the company had investigated the possibility of using vinyl plastics.

With interest aroused, these men reasoned that they might be able to reduce coating time, cut mixing time and avoid the hazards of toxic solvents. They had noticed that, since there is no solvent or diluent to evaporate during processing, the fused coating made with a plastic is smooth, and the finished product pliable, attractive and essentially strain-free. Then too, they would like to avoid using so much space for storing solvent — 30-40% — present in the organosol as received.

Before switching to organosols, the company had been using pyroxylin coatings. Poor abrasion resistance, cracking and peeling usually result from this type of coating. Organosol coatings eliminated these disadvantages. The problems of toxicity and solvent recovery, while not completely eliminated, were reduced.

**Solution:** About a year ago, the company started to investigate samples of Geon paste resin 121 made by B. F. Goodrich Chemical Company. For 3 or 4 months the technical men of the company were getting acquainted with the plastic resin and its characteristics when mixed with various plasticizers and other compounding ingredients.

At first, the production men believed the plastic pastes prepared as suggested "starting point" recipes were too thick to flow properly on coating machinery. However, it was found that they had applied rule-of-thumb tests that, though reliable for organosols, were misleading when applied to plastics.

#### No Solvent in Plastic

This can be explained by the different composition of the two classes of compounds. Organosols contain solvents, while plastics contain only the resin dispersed in a liquid plasticizer, without solvent. An organosol that has aged and lost its solvent through evaporation is not usable. The absence of solvent in a plastic permits its use in an aged condition because its vehicle will not evaporate.

A small plant-run convinced the production men that the apparently thick plastics spread perfectly on their coating machinery. They were also shown that viscosity adjustments can be made by varying plasticizers in the recipe and that choice of other compounding ingredients can also have a marked effect on viscosity.

The next step was tailoring the recipe to the application. At this point, the sales service laboratory of Goodrich

Chemical worked in close cooperation with the laboratory of this company. Finally, the "switch-over" from laboratory to production scale was accomplished. This was a simple matter because a plastic is a 100% total solids material and there are no problems of evaporation of diluent or solvent.

#### Adjusting Coating Weight

It might be interesting to discuss one of the problems arising during the commercial development. It was desired to obtain the proper coating weight in one or two passes instead of creeping up on it in four or more "light" passes as had been done with organosols and pyroxylin. The more the passes, the easier it is to adjust the weight of the coating, i.e., thickness is adjusted from one coat to the next and, when only one or two passes are used, there is less chance of compensating for error. This difficulty has been overcome by operator training and higher equipment precision.

**Results:** Coating with plastic maintains all the advantages of an organosol over pyroxylin, plus some others. Cost is reduced because no solvent or diluent is needed. Long mixing cycles are unnecessary because of the close particle size control. Workable pastes are

made in 1-2 hours in "change-can" mixers, and in a short a period as 5 to 10 minutes in internal mixer such as Baker-Perkins. Film thicknesses to 25 mils or more are produced in one or two passes on coating machine. Well-defined, deep-grained embossing is easily obtained.

Absence of toxic and flammable solvents and diluents assures safer operation and justifies lower insurance rates. Besides, solvent recovery is not required. Storage space requirements are reduced because the plastic is a 100% total solids material, without diluent.

An additional saving is realized by using the plastic. In fabric coating, a certain amount of coating dope is spilled off fabric at each side of knife. When a plastic is used, this excess can be poured back into machine for re-use. When a coating compound containing solvent is poured directly back onto coating machine without reprocessing, irregularities are sometimes caused in coating because of the different consistency of re-used material as compared to virgin material.

**Source:** Geon paste resin 121 is a development of B. F. Goodrich Chemical Company, Dept. CP, 324 Rose Bldg., Cleveland 15, Ohio. . . or for more information check CP 1973 on handy form, pages 2 and 3.

### Allyl Starch Coatings Resist Heat and Solvents

**Company making starch semi-commercially, offering it in solvents or as special baking formulation**

**USES:** In printing inks, overprint varnishes, shellac substitutes, and oil, solvent and heat-resistant finishes for wood and metal. Serves as binder with linseed oil in linoleum. Shows promise as labeling adhesive for cans or jars containing greasy materials, and as binder for duplicating stencils and backing sheets.

**Features:** Important in applications as coating are

the high resistance to heat and solvents, and the rapid drying rate. Fast dry, plus high gloss, are experienced when used in aniline inks. These inks produce sharp, opaque impressions with bright, uniform surfaces on glassine or cellophane.

**Description:** Company is making allyl starch in semi-commercial quantities and offering it in lacquer

solvent, technical ethanol or toluene-isobutanol. Besides these forms, a specially compounded allyl starch baking formulation is available that is highly water and heat-resistant.

As a baked lacquer or enamel, this formulation produces hard, tough and flexible films that can stay under water 3 weeks without damage. Normally, the compound bakes to durable solvent-resistant coating in 90 min at 110°C or 45 min at 125°C, but baking time may be shortened to 1 or 2 min at higher temperatures.

As an overprint varnish, allyl starch is being used for coating beer cans. Films are resistant to solvents, acids, soap and water. When used in linoleum, the starch cures rapidly, gives an extremely smooth finish with improved alkali-resistance. High-solids allyl starch solutions in technical alcohol are now used commercially for bonding oily or greasy surfaces.

In coatings for industrial and marine equipment, allyl starch compositions containing pigment or metal make very hard and lustrous films which are highly resistant to heat and solvents. Coatings have not shown signs of deteriorating, yellowing or blistering after more than 90 days on the inside of high-temperature baking ovens. Other allyl starch coatings have demonstrated very good resistance to continuous and intermittent sprays of 20% sodium chloride.

#### Fast-drying Lacquers

Lacquer formulations are of particular interest as coatings for furniture and similar wooden surfaces because they form films that dry fast and may be sanded soon after application. At room temperature, these films become tack-free to foil in 2 hours and mar-resistant within 24 hours. They develop solvent resistance in a few days. At 75°C, they cure sufficiently for most applications within 30 min. On metal, they cure within 1 min at 200°C.

After drying overnight, such coatings show high resistance to acetone and similar lacquer solvents.

Allyl starch itself is an unsaturated starch containing about 1.7 allyl groups per glucose unit. It is soluble in alcohols, ketones, esters, halogenated hydrocarbons, nitroparaffins, ethers, toluene, high-flash aromatic naphthas, and in other aromatic hydrocarbons when a small amount of hydrogen-bond-forming solvent is present. Although normally insoluble in aliphatic hydrocarbons, these hydrocarbons may be used as diluent when mixture contains small amount of high-boiling active solvent.

**Source:** General Mills Research Laboratories, Dept. CP, 2010 E. Hennepin Ave., Minneapolis 13, Minn. . . or for more information check CP 1974 on handy form, pages 2 and 3.

#### Handling, applications of sols, gels, emulsions, foams

Book covers subject of colloids, their formation, stability, properties and applications, in 444 pages. After discussion of the colloidal state in general, Part I deals with adsorption phenomena at different types of interfaces.

Part II contains 10 chapters on lyophobic and lyophilic sols. Shorter sections follow, investigating gels, emulsions, foams, aerosols, and solid sols. Final 2 chapters outline applications of newer colloids.

"Colloid Chemistry", by H. B. Weiser. Remit \$5.50 direct to John Wiley & Sons, Inc., Dept. CP, 440 Fourth Ave., New York 16, N. Y. Or, for more information check CP 1975 on handy form, pages 2 and 3.

JULY, 1949



profitable reading for research chemists



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To help research chemists in their work with fatty acids, Armour and Company offers this informative 12-page technical bulletin, "The Chemistry of Fatty Acids," describing the fatty acids, their compositions, reactions and derivatives. See Table of Contents below.

To date, the fatty acids have found wide commercial use in fields ranging from chemicals to cosmetics, inks to insecticides, leather to lubricating greases, paper to protective coatings, plastics and synthetic resins to putties and caulking compounds, as well as in ore flotation, rubber compounding, edible products, metallic soaps, buffering compounds, soaps and synthetic detergents, textile processing chemicals, waxes and polishes, etc. But fatty acids and their compounds offer chemists an almost unlimited range of chemical and physical properties from which to choose. That's why research chemists are continually discovering new commercial applications for the fatty acids.

Thanks to expanding production, Armour can now offer prompt shipment of the most complete line of fatty acids available—many at pre-war prices. Quotations, samples, and technical information are available upon request.

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General Reactions of Fatty Acids . . . Reactions Involving the Double Bonds . . . Oxidation . . . Polymerization . . . Hydrogenation . . . Halogenation . . . Sulfonation and Sulfation . . . Reactions Involving the Carboxyl Group.

Soaps or Salts of Fatty Acids . . . Acyl Halides . . . Esters . . . Acid Anhydrides . . . Ketenes . . . Ketones . . . Aldehydes . . . Alcohols . . . Amides . . . Nitriles . . . Amines.

Plus an extensive bibliography of technical references relating to the fatty acids.

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When inquiring check CP 1976 on handy form, pgs. 2-3

### 3 New to the chemical world... UNUSUAL COMPOUNDS



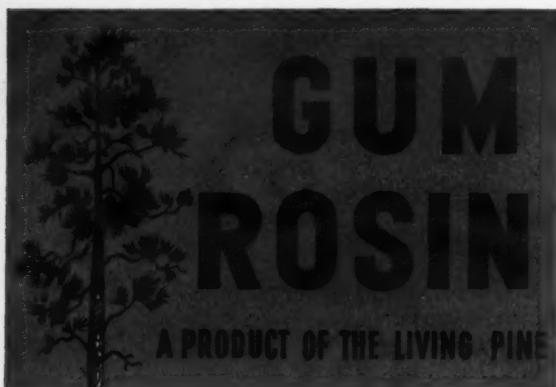
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Investigate these new nitrogen- and sulfur-containing organic acids—as acids or as intermediates for esterification and salt formation.

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 GEON polyvinyl materials • NYCAR American rubber • GOOD-RITE chemicals and plasticizers

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When inquiring check CP 1978 on handy form, pgs. 2-3

## Corn Extract Lends Drape, Resilience to Fabrics; Resists Larvae, Laundering

Soft, warm protein fiber blends with cotton, rayon, wool, nylon, etc., in conventional processing

**USES:** Fiber is blended with cotton, wool, rayon, acetate, nylon or ramie to obtain certain desired characteristics in the finished goods. For example, it adds drape to worsteds and wool knits, and helps them resist wrinkling and creasing. It also adds shape and loft. To a blend with cotton, the fiber brings drape, shape, softness, elasticity, better handle and feel and mildew resistance. It also adds these qualities to rayon blends and makes it easier to get dye effects.

It is reported that a wide variety of new suiting fabrics can be produced by blending with acetates. With nylon, fiber adds absorbency, softness and drape.

**Features:** Processed in conventional equipment and with conventional chemicals and dyes. Resilient and resists deformation to marked degree. At 2% elongation, modulus is 0.46 gm/den. Has warmth equal to finest wool, but it has no unpleasant odor when wet, is non-itching and has not been known to cause an allergy. Resists acids and is not drastically affected by alkalies.

Highly resistant to mildew and bacteria and completely repellent to moth and carpet beetle larvae. It is not damaged by dry cleaning and can be boiled in water for many hours. After 5 launderings, at the boil, test fabrics show less than 2 1/2% shrinkage in both warp and filling. It is non-felting.

Less inflammable than the cellulosic fibers. It is not affected

by temperatures to 310°F if this heat is maintained for less than 40 min. Fiber becomes slightly brittle if these conditions are exceeded.

**Description:** Vicara is made from zein, a pure protein extracted from corn. The light-gold fiber is soft and uniform. Denier and staple lengths are carefully controlled. Fiber is clean, free of noils, and contains no foreign matter. Crimp is imparted to it to facilitate carding and spinning. Specific gravity is 1.25, toughness index 0.25 gm-cm/den-cm, stiffness index 2.4 gm/den/elongation. Tensile strength averages 16,000 psi and tenacity when dry is 1 gm/den. Elongation of Vicara fiber averages 42% in dry state and 50% in wet. Moisture regain is 13%, moisture absorbency being about the same as that of animal fibers. Total water retention estimated at 64%. In aqueous solutions of pH 7.0, cross-sectional area swells 20%.

Although fiber is as water-repellent as wool, this does not interfere with warm wet processing because repellency is not apparent at temperatures above 110°F. Repellency is permanent at room temperature and is not removed by dry cleaning or repeated laundering, it is reported. Supplied in any staple length from 1/2 to 6" and in deniers from 2 to 4.

**Source:** Product of Virginia-Carolina Chemical Corporation, Dept. CP, Richmond 8, Va. . . . or for more information check CP 1979 on handy form, pages 2 and 3.

**Source:** Product of The Hart Products Corporation, Dept. CP, 1440 Broadway, New York 18, N. Y. . . . or for more information check CP 1980 on handy form, pages 2 and 3.

**Completely remove dissolved oxygen to zero residual in 20 seconds . . .**

catalyzed sodium sulfite practical, economical solution of many corrosion problems

**Uses:** Specific examples of effective application are: prevention of corrosion in hot and cold water lines. Removal of oxygen prior to hot water generators. Corrosion protection in compressors, Diesel engines, and other specific pieces of equipment. Prevention of corrosion in feed lines and economizers.

**Features:** Complete oxygen removal, down to zero residual, has been accomplished in 20 seconds contact time. Complete elimination of the corrosive qualities of dissolved oxygen has been obtained in this short contact period. By means of the catalytic effect, this catalyzed sodium sulfite

can be employed for rapid removal of oxygen without the need of using excess quantities of sulfite or altering pH or increasing the water temperature.

**Description:** Corrogen is the name of this catalyzed sodium sulfite. For proper control of the treatment it is necessary to feed it in proportion to the water flow in order to continuously achieve complete oxygen removal. If the system operates at a constant rate of flow, a constant rate chemical pump can be used in feeding the treatment solution. However, if the water flow is variable, some method of proportioning is necessary, such as a double orifice type by-pass proportional feeder, proportioning pumps, etc. Shot feeding of the treatment would be of no value, of course.

It is necessary to introduce Corrogen into the system at a point sufficiently in advance of the equipment to be protected to insure full oxygen removal. A minimum contact time of 20 seconds must be provided in order that the oxygen is completely removed from the treated water prior to contacting the equipment to be protected. Because Corrogen reacts very quickly with oxygen, it is necessary to employ a floating cover on any solution tank or to otherwise exclude air contact with the solution.

The quantity of Corrogen required is dependent on the oxygen content of the water to be treated. Approximately 10 ppm of Corrogen is required for each 1 ppm of dissolved oxygen, plus residual desired to be maintained on the treated water as a corrosion test.

In general Corrogen is applicable to any problem involving oxygen corrosion except where the water is continually exposed to contamination from the atmosphere.

**Source:** Corrogen (catalyzed sodium sulfite) is a product of W. H. & L. D. Betz, Dept. CP, Gillingham & Worth Sts., Philadelphia 24, Pa. . . . or for more information check CP 1981 on handy form, pages 2 and 3.

**Strength, resiliency, elasticity  
are features of pure latex  
lab tubing . . .**

non-toxic material resists light-deterioration, aging; can be sterilized repeatedly without harm

**Uses:** Transmission of gasses and liquids in the laboratory and plant. When cut up, tubing serves as packing, washers, gaskets, etc.

**Features:** Practically pure gum, non-toxic; no dust or chemicals used in manufacture, it is reported. Compounded for maximum resistance to light deterioration and aging, it withstands repeated sterilizations. Has high strength, elasticity and resiliency.

**Description:** Pure latex laboratory tubing is made in 16 standard sizes ranging from 1/8" ID x 1/32" wall to 1" ID x 1/8" wall. Special sizes between 1/8 and 1" ID can be made. Furnished in 12' lengths.

Strength of 4500 psi is due to the pure rubber latex used in manufacture, and the fact that tubing has no seams to break. Specific gravity is 0.98. Being proportionately lighter in weight and easier to handle than most tubings of equal strength, it is ideal for use on even the most delicate laboratory equipment.

Elongation is 850%, Durometer hardness is 35 plus-minus 5. Tubing makes air-tight seal on practically any type of connection, and can be slipped over those several sizes larger than its own ID. Connections are easily made but will not pull out accidentally. Only slightly affected by temperature changes.

**Source:** Rubber Latex Products, Inc., Dept. CP, Cuyahoga Falls, Ohio, is the maker . . . or for more information check CP 1982 on handy form, pages 2 and 3.

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reduced. Furnaces respond more readily to temperature changes . . . afford better quality control. Then, too, light weight B&W I. F. B. require less costly supporting steel-work.

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When inquiring check CP 1984 on handy form, pgs. 2-3



### MATERIALS

**Tough vinyl coatings resist acids, alkalies, organics, corrosive gases . . .**

damaged areas easily repaired by cleaning, recoating with brush or spray-gun

**Uses:** To provide corrosion-protection for wood, metal, concrete, etc., which is exposed to corrosive gases, to continual or alternate submersion in salt water or fresh water, or to corrosive solutions.

**Features:** Easily applied and repaired. Tough, abrasion-resistant, and practically inert.

**Description:** Vinyl resins are available in several formulations, depending upon service requirements. Films adhere to concrete, stone, brick, wood, and metal surfaces as impermeable, integrated coatings. Excellent adhesion is reported, even to aluminum, magnesium, cadmium and galvanized iron.

Application requires only simple cleaning and coating with brush or spray-gun. No heating or baking is necessary. Accidentally damaged areas may be repaired by cleaning the surface and recoating with resin. Solvents in the resin soften old coating, weld new film to the old.

Coatings are unaffected by aliphatic alcohols, by inorganic acids, and by organic acids except formic and acetic. Oxidizing agents, including potassium dichromate and permanganate, and reducing agents including chlorine water and the hypochlorides, do not attack the films.

Coatings are odorless, tasteless, and retain flexibility over long periods of time.

**Source:** Product of Dennis Chemical Co., Dept. CP, 2701 Papin St., St. Louis 3, Mo. . . . or for more information check CP 1986 on handy form, pages 2 and 3.

**Fine straining, free flowing qualities combined in metal filter cloth . . .**

now available in Monel metal and Chrome "C"; also woven to order in various alloys

**Uses:** Present uses include various chemical process filtering applications. Use for filtering fuel in jet propulsion engines and for diesel injection fuel systems is also indicative of its serviceability.

**Features:** Combines the advantages of very fine particle retention and favorable flow capacity with strength and corrosion resistant qualities.

**Description:** Identified as "Michigan Specification 8700." It was developed at the University of Michigan and the Detroit Testing Laboratory, under a five year research program sponsored by the Michigan Wire Cloth Company.

**Specifications:** Warp count 80 mesh (80 wires per inch); fill (shute) count 700 mesh (700 wires per inch); warp wire diameter .004"; full wire diameter .003". Type of weave, Twilled Dutch. Thickness of cloth .0105". Weight of cloth 26.2 per 100 sq. feet (Chrome "C"). Size particle retention .0012". Flow rate per sq. in. 2.3 gals. per minute.

In connection with foregoing it should be understood that the fill count is a function of the fill wire size and because of commercial tolerances the above figures are subject to a 5% variation. Particle size retention cited pertains to round solid particles. Tolerances as per Bureau of Standard Sieve Specifications. Flow rate figure cited is with

**Everyone  
has problems**



"Now I suppose you will want it delivered!"

VICTOR CHEMICAL WORKS

**If yours happens to be a dependable source of supply for SODIUM TRIPOLYPHOSPHATE contact VICTOR\***

Because of its unique water softening action, rapid and complete solubility, peptizing and dispersing action, Victor Sodium Tripolyphosphate is widely used in built soap and detergents, industrial cleaners, as water softening applications. It can be used in bar and chip soaps because of good solubility and freedom from "blooming." It is an excellent dispersant for pitch control in paper making, for dispersing clay and for conditioning drilling muds. Ask for complete data and experimental samples. Write today, or fill in and return coupon.

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VS

When inquiring check CP 1987  
on handy form, pgs. 2-3

**HARWICK STANDARD CHEMICAL CO.**

AKRON 8, OHIO

BRANCHES: BOSTON, TRENTON, CHICAGO, LOS ANGELES

When inquiring check CP 1985 on handy form, pgs. 2-3

## MATERIALS

water at 70 degrees F. with one pound per square inch pressure differential.

Source: "Specification 7800" is a development of Michigan Wire Cloth Co., Dept. CP, 2100 Howard St., Detroit 16, Mich. . . . or for more information check CP 1988 on handy form, pages 2 and 3.

### Organic sulfur compounds in experimental lots . . .

3 chemicals undergo usual reactions of fatty acids

Uses: Offered for experimental evaluation, these 3 compounds undergo usual reactions of fatty acids: esterification, salt formation, amide formation, etc.

Description: First compound, (benzothiazyl-2)-carboxethyl sulfide, is a light-buff-colored material melting at 139-141°C. It is slightly soluble in water and soluble in sodium hydroxide solutions. May be recrystallized from alcohol.

Anhydrous, white, crystalline beta-isothioureidopropionic acid has melting point of 178-180°C. Soluble in water, from which it recrystallized and is obtained as a hydrate or in the anhydrous form, depending upon drying conditions used.

Third compound, beta-dithiocarbamylpropionic acid, is white, crystalline solid melting at 124-126°C. It is slightly soluble in water, but dissolves readily in sodium hydroxide solutions, from which it can be recrystallized with acid. It can also be recrystallized from ether-petroleum ether solutions.

Zinc salt is formed by adding water solution of a soluble zinc salt to water solution of ammonium or alkali metal salt of the acid. Zinc salt is a white solid melting at 145°C (decomposition). Zinc salt reacts with amines to form addition complexes. If beta-dithiocarbamylpropionic acid is dissolved in alcohol, and ammonia passed in, the insoluble ammonium salt precipitates. This is a white solid melting at 123-125°C.

Source: Being produced by B. F. Goodrich Chemical Company, Dept. CP, 324 Rose Bldg., Cleveland 15, Ohio . . . or for more information check CP 1989 on handy form, pages 2 and 3.

### Vinyl flooring-tile features durability, resiliency, and dimensional stability . . .

proves impervious to strong soaps, alcohols, greases; is of 3-ply laminated construction

Uses: Decorative, yet sturdy protective flooring.

Features: Top layer is transparent; has soft, satin finish, requires no waxing. Durable, resilient.

Description: All plies are of vinyl plastic. Top layer is exceptionally abrasion-resistant, has very smooth surface. Center layer is pigmented vinyl, to add body and color to tile. Bottom layer adds extra resiliency, has an embossed lower surface to facilitate installation. Flooring is identified as "Sanitile".

During lamination, three layers are equalized against creeping and shrinkage when subjected to temperature extremes. Tiles are said to bond more firmly with continued use, and dimensional stability is reported to be excellent.

Source: Developed by The Glenn L. Martin Co., Dept. CP, Baltimore 3, Md. . . . or for more information check CP 1990 on handy form, pages 2 and 3.

# One Source for Vinyl Coating and Adhesive Resins for Every Need!

## THERMOPLASTIC RESINS

PRODUCT	Approximate Chemical Composition			Intrinsic Viscosity (Cyclo- hexanone at 20° C.)	Spec- ific Grav- ity	Solubility Characteristics		Remarks:			
	% By Wt.					Solvents Commonly Used	Concentrations Normally Used				
	v.e.	v.a.	other				%				

## VINYL CHLORIDE-ACETATE RESINS

### Metal and Paper Coatings

VYCC <sub>a</sub>	62	38	—	0.28	1.30	Esters, ether-alcohols, ketones. Tolerates hydrocarbons and alcohols	40	n-Butyl Acetate	Compatible with nitrocellulose, and with other vinyl chloride-acetate resins. Improves resistance to chemicals and outdoor exposure of nitrocellulose finishes.
VYLF	87	13	—	0.24	1.34	Ketones, selected esters	35	1/9 Ketone/Toluene	Blend with VYHH to increase solids, gloss and build. Lowers flexibility and softening range.
VYHH-1	87	13	—	0.53	1.36	Tolerates aromatic hydrocarbons	20	1/1 Ketone/Toluene	For general coatings which require little or no plasticizer.
VMCH	86	13	1 <sub>b</sub>	0.53	1.35		20	1/1 Ketone/Toluene	Use alone or blend with other vinyl chloride-acetate resins for air dry and low bake adhesion. Reacts with basic pigments, resins, etc.
VAGH	91	3	2.3 <sub>c</sub>	0.57	1.39	Ketones, selected esters. Tolerates hydrocarbons and alcohols	20	1/1 Ketone/Toluene	Compatible with wide range of other coating materials. Air dry adhesion to most coating vehicles.

### Cloth and Paper Coatings

VYNS-3	90	10	—	0.79	1.36	Ketones	18	M.E.K., Atmos. Temp. M.E.K., Heated	Intermediate properties of this group as regards solubility, plasticizer-tolerance, heat sealability.
YVCM	91	9	—	1.38	1.37		32	M.E.K., Atmos. Temp. M.E.K., Heated	Physical properties similar to VYDR. More soluble.
VYDR (formerly VYNW-2)	95	5	—	1.25	1.39	Cyclic ketones atmos. temps., methyl ethyl ketone heated	14	Cyclohexanone, Atmos. Temp. M.E.K., Heated	Can be highly plasticized to give tough, elastic coating, non-tacky even at 225°F.
VYNV-1	95+<5	—	—	1.53	1.39	Disperse (not dissolve) in hydrocarbons and/or plasticizers	35	20/80 Diisobutyl Ketone/Xylene	For use in organosols. Rapid drying. Fuse at 350°F. Plasticizers permit higher solids.
VYNV-2	95+<5	—	—	1.52	1.39		50	FLEXOL Plasticizer DOP	For use in plastisols (coatings of 100% non-volatile content).

(a) Supplied as 40% solution in n-butyl acetate (91% grade).

(b) 1% interpolymerized dibasic acid (0.7 to 0.8 carboxyl).

(c) Hydroxyl (2.6 times greater when calculated as vinyl alcohol).

(d) Gels on cooling.

## VINYL BUTYRAL RESINS

### Wash Primer WP-1, Metal and Wood Finishes

XYHL	—	—	7 <sub>a</sub>	0.81	1.03	Alcohols, alcohol plus ketone, esters. Tolerates aromatic hydrocarbons. (Water latent solvent.)	15	Ethanol	Strongly adhesive; excellent resistance to sunlight. Solvent, water resist, and soft, term. increased by reacting with drying oils, BAKELITE Phenolic Resins, vulcanizing agents, etc. Increases toughness, flexibility and adhesion of thermosetting materials. Compat. n/c, shellac, castor oil, etc.
XYSG	—	—	7 <sub>a</sub>	1.16	1.03		10	Ethanol	

(a) Hydroxyl. (2.6 times greater when calculated as vinyl alcohol.)



BAKELITE CORPORATION, Unit of Union Carbide and Carbon Corporation UCC 30 East 42nd Street, New York 17, N. Y.

When inquiring check CP 1991 on handy form, pgs. 2-3



## No longer dangerous...

Until recently, talc was used exclusively to make these innocent-looking rubber gloves slip on more easily. Though sterilized, when this apparently innocuous powder found its way into open incisions it sometimes caused serious post-operative adhesions and granulomas! Now — the Research Laboratories of National Starch Products and Johnson & Johnson have developed 'BIO-SORB', a safe, non-irritating product that has excellent dusting properties and may be steam sterilized without becoming sticky or gummy. More important, under extensive clinical tests 'BIO-SORB' has demonstrated that it can be safely and rapidly absorbed by even the most delicate membranes! Ethicon Suture Laboratories (Division of Johnson & Johnson) sell 'BIO-SORB', of which National's VULCA 100 is a major ingredient. 'BIO-SORB' is now widely accepted by the medical profession.

## What is Vulca 100?

VULCA 100 is an ether derivative of ungelatinized starch. In the presence of water its starch granules are resistant to the swelling action of heat or chemicals. It can be autoclaved without essentially affecting its properties. After boiling in water, its granules settle without becoming appreciably hydrated, swollen or ruptured. VULCA 100 hydrolyzes by means of acids and enzymes more slowly than ordinary corn starch. Its excellent physical qualities of flow and fineness are aptly demonstrated in this illustration. Note how VULCA 100 (despite having been steam sterilized) has covered the hand to the right with a fine dusty film, while ordinary cornstarch has lumped together in the crevices of the palm!



## Where can you use Vulca?

Because 'Vulcanized' starch is available in intermediate grades (VULCA 15, 30, 60) of resistance to gelatinization, it offers vast industrial possibilities. To cite a few examples . . . COSMETIC: As a base for rub-off and massage creams, VULCA is non-irritating and readily absorbed by the body when introduced into open cuts or abrasions . . . FOODS: The use of an intermediate grade of VULCA results in improved appearance, consistency and flavor. Due to its resistance to breakdown when "pressured", less VULCA 30 is required to achieve a given thickening effect in pressurized foods . . . also, as a thickener in the alkaline electrolyte solution of storage batteries to insure more stable viscosities . . . rubber dusting . . . and paper coating.

Further information and samples can be obtained from National Starch Products, Research and Development Laboratories, 270 Madison Ave., New York 16, New York.



STARCHES — AND SPECIALTIES WITH EASILY DEMONSTRATED SUPERIORITY

When inquiring check CP 1992 on handy form, pgs. 2-3

## MATERIALS

### **Stabilizes emulsions of many kinds . . .**

highly effective material forms permanent complexes with polyvalent ions to prevent their precipitation

Uses: Added to an emulsion, material prevents precipitation of many ions and electrolytes, thereby preventing coagulation of dispersed phase, and discoloration. Since it is incompatible with cationic agents, it can be used for cationic emulsion-breaking. Product also serves as corrosion and oxidation inhibitor, possibly due in part to its mild reducing action.

Besides these uses, properties point to other possible applications as solubilizer.

Features: Efficiency as emulsion stabilizer not affected by moderate heat, dilute acids or alkalis, or by some oxidizing agents such as hydrogen peroxide, hypochlorous acid in either acid or basic solutions. Good compatibility with organic systems, and with many anionic and non-ionic emulsifiers and compounds. Highly effective: 0.05%, based on total volume, has been used with good results in presence of Mg, Ca, Fe (OH) ions.

Description: Teac-90 is an organic salt containing a small amount of mixed alkyloamines and water. It is hygroscopic, miscible with water, soluble in many alcohols, and is non-toxic, having a slight agreeable odor. The light amber, viscous liquid gives pH of 7.5-8.0 in 25% solution. Bulk of material boils above 300°C. Specific gravity approximately 1.20.

Forms permanent complexes with many polyvalent metallic and alkaline-earth ions, with resultant modification of their properties. For example, it prevents precipitation of Ca, Mg, Mn, Fe, etc. in many neutral or alkaline solutions.

Material may be simply added to water phase prior to emulsification, or mixed into finished emulsion. Conditions of processing and subsequent usage of emulsion usually determine procedure.

Source: Process Chemical Specialties, Dept. CP, P.O. Box 345, Beverly, Mass. . . or for more information check CP 1993 on handy form, pages 2 and 3.

### **Patches holes, dents in metal, by cold process . . .**

moldable alloy dries to harder-than-lead surface that sticks tightly, machines readily

Uses: To fill holes and dents in tanks, other metallic equipment.

Features: Adheres strongly and is sufficiently flexible to take strain without cracking, crumbling or peeling, maker reports. No heat required in making repairs.

Description: Metal alloy in moldable form is applied with brush, spray gun, knife or spatula. Met-L-it Fiber is first put into large holes, in which it molds to any contour and adheres firmly. It is then coated with the alloy, Met-L-it, for hard metal finish. Met-L-it Solvent is used in applying the Fiber, or in thinning Met-L-it when it is to be applied by brush or spray.

The 70-30 alloy dries harder than lead and can be filed, ground, sanded to feather edge, drilled, chiseled, tapped, sawed and otherwise machined like other metals. It takes primers, enamels or lacquers without bubbling, cracking or peeling, and is not affected by paint or lacquer solvents.

Source: R. M. Hollingshead Corp., Dept. CP, Camden, N. J. is the maker . . . or for more information check CP 1994 on handy form, pages 2 and 3.

**NIACET**  
Trade-Mark

## ACETONITRILE

is recommended for the

## PURIFICATION

of a variety of chemicals — it acts as a specialized solvent and crystallization medium.

For example, fatty acids and alcohols containing 8 to 18 carbon atoms are infinitely soluble at 60°C. in Acetonitrile, but only slightly soluble at lower temperatures. The solubilities vary widely with slight changes in temperature permitting easy separation by fractional crystallization.

Acetonitrile may be used to extract the fatty acids and other impurities from linseed oil, cottonseed oil and other fatty oils.

Many other compounds can be purified with this solvent because of its selective solvent power.

Acetonitrile is a stable, clear, colorless liquid with an aromatic odor.

**BOILING RANGE . 80-82°C.**

**PURITY . . . . . 99% MIN.**

**SPECIFIC GRAVITY**

**at 20° C. 0.782-0.785**

For further information write to:

**NIACET**  
CHEMICALS DIVISION

UNITED STATES VANADIUM CORPORATION  
Unit of Union Carbide — Nit and Carbon Company

Sales Offices

926 Niagara Bldg. Niagara Falls, N. Y.

When inquiring check CP 1995  
on handy form, pgs. 2-3

CHEMICAL PROCESSING Preview

## MATERIALS

### Activity of accelerator for rubber is high . . .

stable, non-discoloring, dust-free material commercially available

Uses: Self-activating primary accelerator for the rubber industry.

Features: High activity, good delayed action and good processing properties are reported. Non-discoloring and practically dust-free, accelerator requires no special handling precautions and has excellent storage stability.

Description: Ethylac is 2-benzothiazyl-N, N-diethylthiocarbamyl sulfide, and combines chemical structures of both thiazole and thiuram types of accelerator.

It is light yellow to tan, has characteristic odor, melts at 71°C, contains maximum of 0.5% volatiles and has specific gravity of 1.27. Now available in commercial quantities, material has been under development for two years and successful runs have been made.

Source: Product of Sharples Chemicals Inc., Dept. CP, 123 S. Broad St., Philadelphia 9, Pa. . . . or for more information check CP 1996 on handy form, pages 2 and 3.

### Molded parts withstand 500°F for 100 hrs . . .

smooth, glossy pieces require no buffing; fast cure cycle

Uses: For molding parts that require heat-resistance and high gloss. Such applications include utensil handles and knobs, etc.

Features: Withstands 400-500°F for more than 100 hours. Can be transferred immediately from room temperature to hot oven without blistering. Molders have produced pot handles with such smoothness and gloss that buffing is not required.

Description: Already in use in several plants, Resinox 10231 phenolic molding powder has proven to be less critical to mold and to have a fast cure cycle. Has low gravity and excellent dimensional stability.

Source: Monsanto Chemical Company, Dept. CP, St. Louis 4, Mo. . . . or for more information check CP 1997 on handy form, pages 2 and 3.

For more information on product at right, specify CP 1998  
see information request  
blank between pages 2-3.

if you use phenolics . . .

**cut resin costs 15-20%**

*"Vinsol" Resin Emulsions and Solutions*



One of the lowest priced, most plentiful dark resins obtainable today, "Vinsol" is saving money for many manufacturers—as a modifier, extender or partial replacement for phenolics. A 15-20% reduction in total resin cost is common—with no appreciable sacrifice in physical or chemical properties. "Vinsol" is available as a solid resin or an emulsion or solution form for use with water-soluble or spirit-soluble phenolics. We welcome the opportunity to work with you on possible savings. Write for technical details, samples, price list.

HERCULES POWDER COMPANY 100 Harrison Street, Newark, New Jersey

# Hooker Chlorobzenes Available for Prompt Shipment

Hooker manufactures five chlorobzenes, principal of which are monochlorobenzene and paradichlorobenzene. These products are of exceptionally high quality to insure the best performance in your applications.

If you are not yet familiar with Hooker quality and service, we invite you to test these materials. Literature and samples are available when requested on your business letterhead.

## PARADICHLOROBENZENE (1, 4-dichlorobenzene)



### DESCRIPTION:

White to clear, transparent crystals with a pleasant aromatic odor. Soluble in most organic solvents; insoluble in water. Available in seven regular sizes.

### PHYSICAL DATA:

Mol. Wt.	147
M. P.	53°C
B. P.	173°C
Flash Point	73°C
Fire Point	108°C

### USES:

Recommended and widely accepted as a highly effective insecticide for agricultural and domestic purposes in control of: peach tree borer, black peach aphids, tobacco blue mold, clothes moths, carpet beetles, fish moths, garden centipedes, etc. Also used in the manufacture of sanitary specialties such as deodorants. As a chemical intermediate in organic synthesis, it is used in the preparation of a variety of chemicals, especially dyestuffs.

Technical Data Sheets on the other Hooker Chlorobzenes: orthodichlorobenzene, hexachlorobenzene, are also available upon request.

*From the Salt of the Earth*

HOOKER ELECTROCHEMICAL COMPANY

15 FORT-SEVENTH ST., NIAGARA FALLS, N. Y.

NEW YORK, N. Y. • WILMINGTON, CALIF. • TACOMA, WASH.

When inquiring check CP 1999 on handy form, pgs. 2-3

## MATERIALS

**Unique detergent rinses easily, is highly soluble over wide temperature range . . .**

agent remains stable in hot, strong acid baths, caustic alkalies; foams in hardest water

**Uses:** As detergent for cleaning of every description with action gentle enough to permit use with sheer synthetic fabrics, powerful enough to aid in pickling of steel. Other uses include service as surface active agent, as emulsifier, as foaming agent.

**Features:** Highly soluble in water of any hardness, over wide range of temperatures. Affinity for water results in easy, thorough rinsing. Forms soluble calcium and magnesium salts when used in hard water, preventing scale formation.

Chemically stable under extreme conditions of temperature, acidity, and alkalinity. Very weak concentrations are effective in reducing surface tension of solutions.

**Description:** Agent, designated as Nytron, is an anionic active complex sodium sulfonate. Produced from petroleum olefins, reacted with nitrosyl chloride and subsequently sulfonated. Contains approximately 35% surface active ingredients, largely sulfonated ketones, amines, and sulfonates.

Water solutions of as much as 36% Nytron may be prepared at 77°F, simplifying handling and speeding distribution of detergent throughout working solution. Retains high solubility in concentrated solutions of many salts, thus preventing precipitation in such applications. Addition of 3½ ozs. of Nytron to 100 gals. of water cuts surface tension by 50%.

Recommended cleaning concentrations vary from 0.1% for light cleaning to 0.4% for heavy duty soil removal. Tests on rats and rabbits indicate that detergent is non-toxic both externally and internally.

**Source:** Produced by Allied Chemical & Dye Co., Solvay Sales Div., Dept. CP, 40 Rector St., New York, N. Y. . . or for more information check CP 2000 on handy form, pages 2 and 3.

**Bearings operate efficiently  
for years without change  
of lubricant . . .**

lubricant resists oxidation; withstands difficult conditions of Canal Zone

**Uses:** Originally developed for use in maker's ball and roller bearings to provide lubrication over a wide temperature range without separation, drying out or hardening.

**Features:** Performance in the field shows that this company's own bearings packed with this lubricant have been giving continuous performance for over ten years with the original lubricant in them.

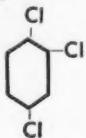
This No. G-66 lubricant is highly resistant to oxidation in storage as well as in service. It is insoluble in water and will not emulsify or aerate in the presence of condensed moisture. Field tests in the Canal Zone have shown its corrosion-resistant properties.

**Description:** In processing this product it is filtered, dirt free and milled to proper consistency. It is subjected to an accelerated oxidation bomb test to check high-resistance to oxidation.

**Source:** Norma G-66 (in tubes and larger containers) is available from Norma-Hoffman Bearings Corp., Dept. CP, Stamford, Conn. . . or for more information check CP 2001 on handy form, pages 2 and 3.

## 1, 2, 4-TRICHLOROBENZENE

Tech.



### DESCRIPTION:

Clear, almost colorless mobile liquid having a characteristic chlorobenzene odor. Completely miscible with most organic solvents; practically immiscible in water.

### PHYSICAL DATA:

Mol. Wt.	181.5
F. P.	-10°C
Dist. R.	205° to 235°C
Sp. Gr., 15.5°/15.5°C	1.465 ± .003
R. I., n20/D	1.570 ± .002
Flash Point	118°C

### USES:

As an insecticide, it is particularly effective as a soil poison in termite eradication; solvent for fats, oils, waxes, resins; as a heat transfer medium; in chemical synthesis for manufacture of dye intermediates and other organic chemicals.

## MONOCHLOROBENZENE

(phenyl chloride)



### DESCRIPTION:

Clear, colorless, moderately volatile liquid, with a characteristic mild odor. Completely miscible with most organic solvents; immiscible with water.

### PHYSICAL DATA:

Mol. Wt.	112.5
F. P.	-44°C
B. P.	131.9° to 132.3°C
Sp. Gr., 15.5°/15.5°C	1.113 ± .001
R. I., n20/D	1.524
Flash Point	29°C

### USES:

Intermediate in manufacture of insecticides, dyestuffs, drugs, perfumes, and other organic chemicals; solvent for paints, varnishes, lacquers; general organic solvent; heat transfer medium for condensing vapor systems.

**HOOKER  
CHEMICALS**

8-826

## MATERIALS

### Plasticizes wide range of resins . . .

tests prove heat, light-resistance of compatible polyester

Uses: Plasticizes wide range of materials, including polyvinyl chloride, polyvinyl chloride-acetate, chlorinated paraffins, chlorinated rubber, acrylic esters, nylon, alkyd resins, nitrocellulose, ethyl cellulose and cellulose acetate-butyrate.

Features: Added to its wide range of compatibility are the features of excellent heat and light-resistance. Combines desirable properties of polymeric and monomeric plasticizers: although permanent, non-migrating and resistant to oil and heat, it has a low viscosity for easy handling.

Description: Typical polyvinyl chloride compositions with G-E 2557 show no darkening in standard Fade-O-Meter tests after 148 hours. 8-month exposures in Florida cause no checking or darkening of polyvinyl chloride and nitrocellulose plasticized with this material.

After 7 days at 121°C, these compositions have shown a small increase in tensile strength with no decrease in elongation.

Source: Polyester type plasticizer is a development of General Electric Company, Chemical Department, Dept. CP, Pittsfield, Mass. . . or for more information check CP 2002 on handy form, pages 2 and 3.

### Wire cloth catalog covers filtering, bulk handling

Information concerning filtering and bulk handling of materials in process is one of the features of a revised 85-page catalog of woven wire cloth.

Specifications, descriptions and illustrations of meshes, weaves, metals and alloys are included. Typical applications of maker's wire filter cloths, screens, and special fabrications such as baskets, racks and fixtures, are shown.

A section giving metallurgical data on nearly every major metal and alloy imparts information acquired in furnishing woven wire conveyor belts and similar items for a variety of uses. Issued by The Cambridge Wire Cloth Company, Dept. CP, Cambridge, Md. When inquiring specify CP 2003 on handy form, pages 2 and 3.

For more information on product advertised at right, specify CP 2004 . . . see information request blank between pages 2-3.

DOUBLE CHECKED ✓ FROM RESEARCH TO INDUSTRY

**Sharples**

# PENTAPHEN\*

(PARA-TERT-AMYLPHENOL)

Pentaphen (para-tert-amylphenol) is of special value in the manufacture of pale-colored, light-stable, oil-soluble resins. It condenses readily with an aldehyde to form reactive or non-reactive resins which are soluble in benzene, toluene and drying oils. Since it is practically insoluble in water, but is soluble in alcohol, an alcoholic solution of Pentaphen can be diluted with water to slightly above the cloud point. This type of water-alcohol solution is useful in preparing germicidal solutions.

Pentaphen is also used as an intermediate for the synthesis of organic compounds for rubber and petroleum applications.

### PROPERTIES OF PENTAPHEN:

Color	white (solid)
Solubility in 10% KOH	100%
Freezing Point	92°C. min.
Phenol Coefficient (Staph. Aureus)	50-55
Phenol Coefficient (E. Typhi)	40

For specifications, prices and further information, write to Dept. D

\*Trademark of Sharples Chemicals Inc.



## SHARPLES CHEMICALS INC.

123 S. BROAD ST., PHILADELPHIA 9, PA.

350 FIFTH AVE., NEW YORK 1, N.Y.

80 E. JACKSON BLVD., CHICAGO 4, ILL.

ETHYL & BUTYLAMINES • ALKYLOLAMINES • AMYL ALCOHOL • AMYL ACETATE • AMYLPHENOLS  
AMYL MERCAPTAN • UREA DERIVATIVES • RUBBER CHEMICALS • HYDROCARBONS  
AMYL CHLORIDES • AMYL ETHER  
DITHIOCARBAMIC ACID DERIVATIVES  
CORROSION INHIBITORS

*Another Celanese First!*

# FLAKE FORMALDEHYDE

GENERAL PURPOSE PARA FORMALDEHYDE

**NOW AVAILABLE IN COMMERCIAL QUANTITIES  
AT HALF CURRENT MARKET PRICE**

Paraformaldehyde—in flake form—is the latest Celanese research development. It is produced by an entirely new process permitting greatly lowered costs.

Flake formaldehyde has no methanol or other inhibitor present, and contains no buffering salts. Its iron content and other impurities are held to formalin specifications. Paraformaldehyde can now replace formalin in many industrial applications to give definite economic and quality advantages.

#### PROPERTIES AND SPECIFICATIONS

APPEARANCE . . . . .	hard, pulverable flakes
FORMALDEHYDE CONTENT (% BY WT. MIN.) . . . . .	91.0%
ACIDITY (% BY WT. AS FORMIC, MAX.) . . . . .	0.05%
ASH (% BY WT. MAX.) . . . . .	0.01%
IRON CONTENT (PARTS PER MILLION MAX.) . . . . .	2
PARTICLE SIZE . . . . .	passes $\frac{1}{2}$ " screen
COLOR (APHA AS 37% SOLN) . . . . .	10
BULK DENSITY (APPROX.) . . . . .	0.65
MELTING POINT (SEALED TUBE) . . . . .	100—125°F
FLASH POINT (TAG OPEN CUT APPROX.) . . . . .	200
IGNITION TEMPERATURE (APPROX.) . . . . .	575°F
FLAMMABILITY . . . . .	combustible solid

Celanese Paraformaldehyde is also available in powder form for special applications. Other types are under development. Write to Product Development Department for New Product Bulletin N-16-1, samples and other information.

CELANESE CORPORATION OF AMERICA, Chemical Division, 55-G, 180 Madison Ave., New York 16



ALCOHOLS • ALDEHYDES • GLYCOLS • KETONES • ACIDS • SOLVENTS • PLASTICIZERS

When inquiring check CP 2005 on handy form, pgs. 2-3

#### MATERIALS

**Kills many noxious grasses without causing prolonged soil sterility . . .**

non-combustible salt controls prickly pear cactus, too; mixes with 2, 4-D and other weed killers

Uses: Controls many noxious grasses including Johnson, Bermuda and quack grasses and the prickly pear cactus. Blended with 2, 4-D or other weed killers, the resultant mixture provides more complete control of weed pests.

Features: Soil sterility is severe but temporary. While use of material prevents plant growth at first, this condition disappears within 30 to 90 days, depending upon amount of rainfall. Non-combustible.

Description: Killing power of TCA, a salt of trichloroacetic acid, has been proven by testing in many localities. It can be applied in relatively light doses to foliage, or the soil can be treated just before the grass seed sprouts. Suggested dosage of the 60% sodium salt is 200 lbs per acre for Johnson grass, 60-200 lbs per acre for Bermuda and quack grass, and 25 lbs per acre for control of small seedlings or to suppress growth of established grasses when complete kill is not desired.

It is reported that prickly pear cactus is eliminated by spraying with solution of about 1 lb of the salt in 1 gal of water. This concentration is recommended for most spray solutions.

Moisture content of soil has important bearing upon effectiveness of soil applications and upon duration of soil sterility. TCA is not recommended for use in crop lands except as spot treatment. It should not be used on or near valuable woody or herbaceous plants or on lawns or closely mowed turf.

Source: Developed by E. I. du Pont de Nemours and Company (Inc.), Dept. CP, Wilmington 98, Del. . . . or for more information check CP 2006 on handy form, pages 2 and 3.

**Line wood tanks, vats, mixers with resin that resists acids, alkalies, solvents, etc . . .**

resists corrosives at temperatures up to 325°F

Uses: To protect wooden tanks, vats, mixers, beaters, from acids, alkalies, solvents, oils, etc. Also protects concrete and steel equipment. Can be used on floors.

Features: Retains corrosion-resistance at temperatures to 325°F. Easily applied.

Description: Hard, waterproof resin is impervious to most corrosives and solvents except nitric acid and sulfuric acid in concentrations over 45%. Relatively brittle, but has flexibility from 7 to 15%. Compression strength is 10,000 psi.

Trowel coat of 1/32" is cited as sufficient for average applications. Any desired thickness can be built up in layers of from 1/32 to 1/8". Can be applied to vertical surfaces in layers of 1/16" without sagging.

Flexibility prevents cracking in most applications. For large areas, Fiberglas reinforcement prevents cracking. Material is supplied as a liquid and a powder, which are mixed together and troweled on surface. Can be applied at ordinary temperatures by inexperienced personnel. Reported to adhere to old wood as well as to new.

Source: Product of CarboLine Co., Dept. CP, 7603 Forsythe Blvd., St. Louis 5, Mo. . . . or for more information check CP 2007 on handy form, pages 2 and 3.

## MATERIALS

### New resinoid offered for evaluation . . .

chlorinated hydrocarbon stable to hydrolysis, temperature

Uses: Compound is being offered for evaluation of possible uses. Suggested applications are: as plasticizer and flame retardant; in manufacture of adhesives; in other formulations for impregnation or coating of wood products, textiles and paper.

Features: Good thermal stability. No hydrolysis during 16 hours of contact with water at room temperature and at 100°C. Impartial tests indicate that compound does not irritate skin which it contacts.

In testing acute vapor toxicity, animals were exposed to concentrated vapors evolved from heated material for period of 8 hours. No untoward reactions were detected, according to laboratory reports.

Description: Chlorinated hydrocarbon-70, a clear and viscous resinoid, is the first of a series of chlorinated hydrocarbons. It has no flash or fire point and is compatible with resins such as vinyl chloride, styrene and rosin. Completely soluble in most alcohols, ketones and hydrocarbons at room temperature.

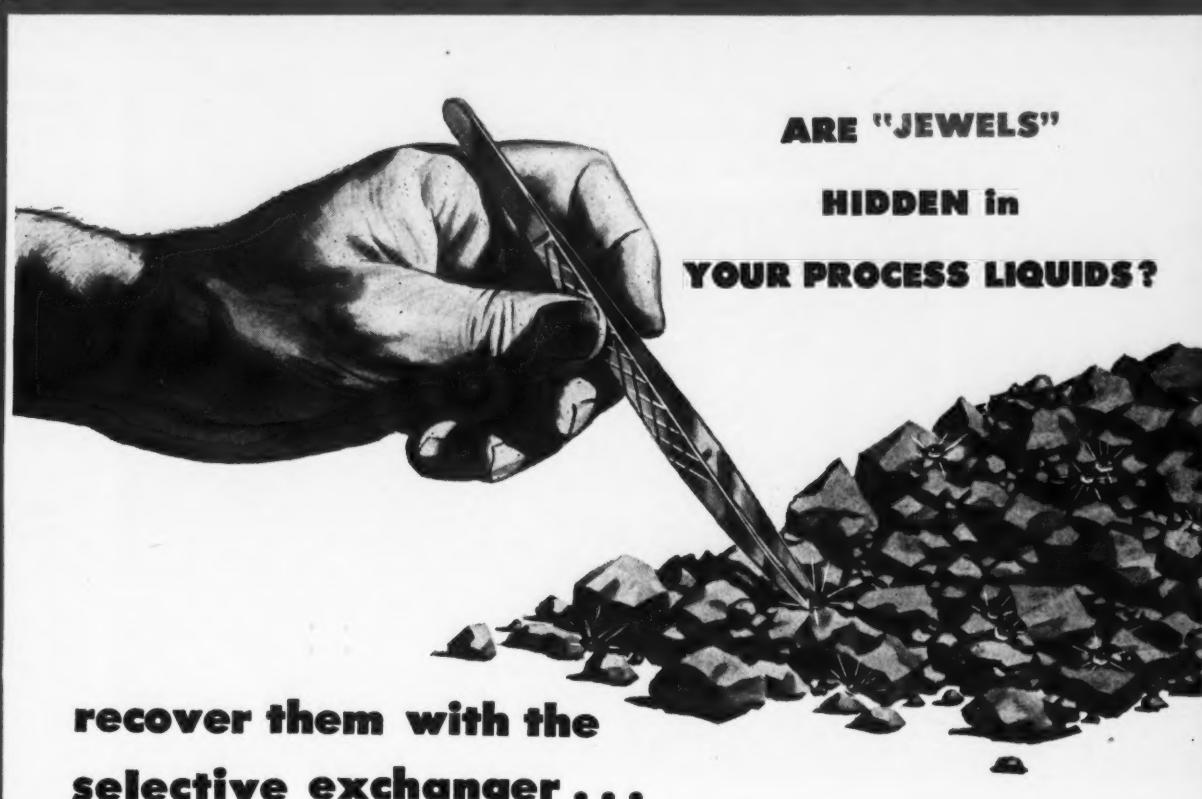
Source: Manufactured by Pennsylvania Salt Manufacturing Company, Dept. CP, 1000 Widener Bldg., Philadelphia 7, Pa. . . . or for more information check CP 2008 on handy form, pages 2 and 3.

### How amine treatment inhibits corrosion

"Corrosion Protection of Steam and Condensate Return Systems" is a 4-page folder, in color, describing amine treatment for boiler and condensate systems. This treatment is said to inhibit corrosion by surface-protection of the metal and by raising pH value of the condensate.

Case histories cite reduced maintenance costs and other typical economies obtained by users. Complete with charts, photographs and flow diagram. Issued by The Bird-Archer Company, Dept. CP, 400 Madison Ave., New York, N. Y. When inquiring specify CP 2009 on handy form, pages 2 and 3.

For more information on product at right, specify CP 2010 . . . see information request blank between pages 2-3.



**recover them with the  
selective exchanger . . .**

### CHECK THESE ADVANTAGES

AMBERLITE IRC-50 is a white, bead-form cation exchange resin whose activity stems from countless carboxylic acid groups. It displays maximum efficiency in the isolation, concentration and purification of compounds that evade capture by ordinary ion exchange.

The capacity of AMBERLITE IRC-50 far exceeds that of other cation exchangers. And because of its affinity for hydrogen ions, the resin can be regenerated by little more than theoretical quantities of acids.

For other adsorption operations, Rohm & Haas provides *strong-acid* exchangers—AMBERLITES IR-100, IR-105, IR-120. Write for full information on these exchangers, too.

### SAVE PROCESS STEPS



**WITH THE AMBERLITES**

## Amberlite IRC-50

Tiny "gems" lie buried in tons of rubble—elusive molecules so much like their neighbors that they defy crude separation methods. To recover them you need selective AMBERLITE IRC-50—the weak-acid exchanger that chooses and discards ions with speed and *precision*.

AMBERLITE IRC-50 has no sulfonic or phenolic constituents to compete for cations—no strong acids whose avidity for cations causes them to seize the bad with the good. Extremely high capacity and high acid-regeneration efficiency combine to bring economy to your separation processes. And AMBERLITE IRC-50 can be buffered to a very wide range of salt-to-free acid ratios, so that adsorption can be performed at controlled pH values—a refinement difficult with strong-acid exchangers.

For *precision and economy* in the recovery of basic and neutral amino acids, alkaloids, vitamins, organic bases, and thousands of other valuable cations, write to Department CP-1 for technical literature or for answers to your specific questions.

AMBERLITE is a trade-mark, Reg. U. S. Pat. Off. and in principal foreign countries.

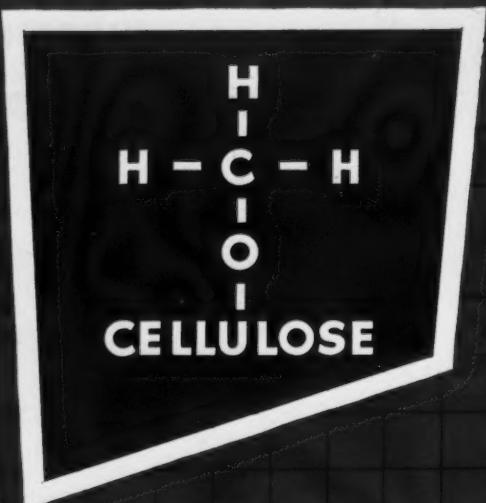
CHEMICALS  FOR INDUSTRY

## ROHM & HAAS COMPANY

THE RESINOUS PRODUCTS DIVISION

Washington Square Philadelphia 5, Pa.

The Resinous Products Division was formerly The Resinous Products & Chemical Company



## Methocel is also a suspending agent

Looking for a good suspending agent? Investigate the *new* Methocel, *powdered*. This cold-water-soluble cellulose ether has proved itself as a binder, thickener, film-former, emulsion stabilizer—and as an excellent suspending agent.

The colloidal properties of Methocel solutions have a suspending effect on many types of particles. Further, because Methocel is also a thickener, it stabilizes most suspensions and emulsions. These properties have made Methocel valuable in the manufacture of pharmaceuticals, paints, printing inks, and in many other applications where the proper suspending agent is important. Investigate the *new* Methocel, *powdered*. Now available in this improved form to facilitate its use. Send for your free, experimental sample today.

THE DOW CHEMICAL COMPANY • MIDLAND, MICHIGAN

SEND FOR EXPERIMENTAL



SAMPLE!

The Dow Chemical Company  
Dept. ME-169A  
Midland, Michigan

Please send free sample of METHOCEL, for use in .....  
Check viscosity desired: 15, 25, 100, 400, 1500, 4000 cps.

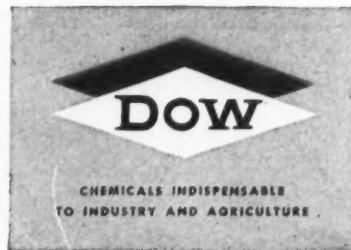
Name and Title

Firm

Address

When inquiring check CP 2011 on handy form, pgs. 2-3

THE new *Methocel*



## MATERIALS

### Palmitic acid available in commercial lots . . .

80% palmitic-content fatty acid has low iodine value, light color, is heat-stable

Uses: Manufacture of cosmetics, esters, metallic palmitates, plastics, other products.

Features: Low iodine value, high melting point, light color, stable to heat. Available in commercial quantities.

Description: Palmitic acid 80 is an 80% palmitic content fatty acid.

Source: Produced by W. C. Hardesty Company, Inc., Dept. CP, 41 E. 42nd St., New York 17, N. Y. . . . or for more information check CP 2012 on handy form, pages 2 and 3.

### Painted interior surface areas resist repeated washing . . .

quick-drying, fade-proof finish holds sheen and color through 10 test-washes of increasing strength

Uses: For finishing interior surfaces.

Features: Highly resistant to rubbing; can be spot-washed indefinitely without losing color or sheen, maker reports. Spots can be repainted without showing joining minutes to permit re-hanging of pictures. Easy brushing marks. Practically odorless. Finish is dry enough in 20 minutes to permit re-hanging of pictures. Easy brushing marks. Practically odorless. Finish is dry enough in 20 minutes to permit re-hanging of pictures. Fade-proof.

Description: Basic ingredients of Spred-Satin are similar to those used in synthetic rubber. Formulation is said to be entirely new, and to employ all post-war advances in titanium oxide pigments. As it dries, finish knits itself evenly over surface, providing a smooth, velvety appearance. Only mild soaps are needed to remove soiled spots.

Has "flat" appearance when examined "head-on" and a sheen when viewed from an angle. Produced in 14 colors.

A building-washing firm reports that it test-washed a Spred-Satin surface 10 times, increasing strength of washing compound each time. No color was rubbed off, even though the last few solutions were far stronger than conventionally used. The company states that it was unable to detect any difference between the washed surface and the adjacent areas, also coated with Spred-Satin.

Source: Product of The Glidden Company, Dept. CP, Cleveland, Ohio . . . or for more information check CP 2013 on handy form, pages 2 and 3.

### Offers two resins for enamels . . .

first shows good features in architectural finishes; other valuable in fast-drying, baking enamels

Uses: Two resins for manufacture of surface coatings. First, BJS-501, is recommended for interior architectural finishes such as trim and wall surfaces in homes, offices, etc. BJS-502 is used in formulating enamel finishes where fast drying is essential: on toys and farm implements, for example, where it is desired to handle items 8 to 10 minutes after spray application.

Features: Mineral spirits can be used as sole solvent with BJS-501. Air-dry enamels made with this resin have exceptionally high gloss and "build", it is reported. They are easily applied by brushing and have high resistance to fogging in interior exposure.

## MATERIALS

BJS-502 produces enamel finishes that dry as fast as lacquers. Baking type enamels based on this resin meet short baking cycles.

Description: Both resins are oil-modified styrene copolymer solutions and are designated as Bakelite "C-10" resins. They have good color retention, stability and pigment suspension.

Enamels based on BJS-502 bake to Walker-Steele hardness of 137 sec in 30 minutes at 250°F. At 300°F, such enamels bake to hardness of 141 sec in 20 minutes.

Source: Bakelite Corporation, Unit of Union Carbide and Carbon Corporation, Dept. CP, 30 E. 42nd St., New York, N. Y. . . . or for more information check CP 2014 on handy form, pages 2 and 3.

### Paraformaldehyde bids for place in thermosetting resin field . . .

short-chain formaldehyde polymer from new process holds less than 10% water, dusts less

Uses: In production of phenol, urea and melamine plastics, leather, rubber, paper and various chemical compounds.

Features: New process is making paraformaldehyde with only 10% water. This means savings in storage, handling and shipping. The new process has also made it possible to produce the paraformaldehyde more economically. Polymer is more water-soluble, less dusting and shows less variation in reactivity, according to the manufacturer.

Description: General-purpose, short-chain polymer being made can be used as a source of formaldehyde for most applications. At present, it is produced only in flake form, but indications are that it will soon be available in other forms for special applications.

Source: Produced on large scale by Celanese Corporation of America, Dept. CP, 180 Madison Ave., New York 16, New York . . . or for more information check CP 2015 on handy form, pages 2 and 3.

### Wrap underground pipe quickly with porous, high-strength glass-fiber mat . . .

continuous strands of glass yarn reinforce wrapping, permit application at high speeds from long rolls

Uses: To provide protective wrap for underground pipe.

Features: High strength makes possible quick application.

Description: New mat is porous, made of glass fibers reinforced with continuous strands of glass yarn. Yarns are made from fine, flexible, textile-like filaments designed to resist soil acids and electrolytic action. Yarns are incorporated in multi-directional pattern, thus increasing tear strength of basic Fiberglas pipe wrap by 200 to 400% in all directions.

High tear strength permits application at high speeds, without delays caused by breakage of the wrap. Long rolls, up to 1000 or 1200 ft. in length, can be used, doing away with frequent machine stoppages to add new rolls.

Source: Product of Owens-Corning Fiberglas Corp., Dept. CP, Toledo 1, O. . . . or for more information check CP 2016 on handy form, pages 2 and 3.



## For effective control of grasshoppers, boll weevil and certain other insects

Two Pittsburgh formulations of Toxaphene have proved to be chemicals of unsurpassed usefulness in controlling grasshopper plague, boll weevil attack, and the damage of many chewing and sucking insects. Both products have been exhaustively field tested under plague conditions, from Canada to South America. They are killers of extraordinary merit.

### Pittsburgh Toxaphene-40

A 40% Toxaphene Concentrate impregnated upon a dust carrier—designed for use by manufacturers, processors or compounders equipped to blend and dilute it to a finished dust. Especially effective as a cotton insect poison. Full technical information about Pittsburgh Toxaphene-40 and the insects controlled by it, may be had by writing for Bulletin 107.

### Pittsburgh Chlorophene-60

A standardized liquid emulsifiable concentrate containing 60% by weight (6 lbs. per gallon) Toxaphene, specifically designed for use where a water spray application is adaptable and practical. Pittsburgh Chlorophene-60 spray concentrate possesses the advantages of marked residual action and is effective on a wide range of insects as described in Bulletin 107.

Write Today for Technical Bulletin No. 107 and Quotations on your Requirements.



PITTSBURGH AGRICULTURAL CHEMICAL COMPANY  
Empire State Building • 350 Fifth Avenue • New York 1, New York

Affiliated with

PITTSBURGH COKE & CHEMICAL COMPANY  
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COAL CHEMICALS • ACTIVATED CARBON • NEVILLE COKE • EMERALD COAL • PIG IRON • GREEN BAG CEMENT • CONCRETE PIPE AND PRODUCTS

When inquiring check CP 2017 on handy form, pgs. 2-3

# Cut plasticizer losses with Flexol\* TWS

PLASTICIZER

IN VINYL PLASTICS . . . FLEXOL Plasticizer TWS stays in your product . . .

- TWS cuts processing losses that cost you dollars.
- TWS cuts losses from products that cost you sales. Good heat stability . . . easy, smooth processing.

IN LACQUERS . . . TWS produces good cold-check and print resistance . . . and stays in your lacquers (it is even less volatile than tricresyl phosphate).

Write or call the nearest Carbide office for technical bulletin F-7141 and samples.

\*"Flexol" is a registered trade-mark of

**CARBIDE AND CARBON**  
CHEMICALS CORPORATION



UNIT OF UNION CARBIDE AND CARBON CORPORATION UCC NEW YORK N.Y. OFFICES IN PRINCIPAL CITIES

When inquiring check CP 2018 on handy form, pgs. 2-3

## Quality fine chemicals

### PHARMACEUTICAL INTERMEDIATES

Allyl Amine	Methyl Iodide
Ethyl Iodide	Hydrazine Sulfate
Semicarbazide Hydrochloride	

### FOOD AND FLAVORING CHEMICALS

Allyl Mercaptan	Diallyl Sulfide
Allyl Isothiocyanate (Mustard Oil)	

### PHOTOGRAPHIC AND DIAZOTYPE CHEMICALS

Ammonium Thiosulfate	o-Phenylenediamine
Benzotriazole	Phloroglucinol
p-Diazo Dimethylaniline Zinc Chloride	

### DYE INTERMEDIATES

Allyl Amine	
Phloroglucinol Commercial	



**EDWAL**

Manufacturers Quality Fine Chemicals

### THE EDWAL LABORATORIES, Inc.

732 Federal Street, Chicago 5, Illinois

When inquiring check CP 2019 on handy form, pgs. 2-3

## MATERIALS

### Pilot plant making reactive cyanuric chloride . . .

reactivity of chlorine atoms differs enough to allow introduction of same or different groups

Uses: Being used abroad for preparation of dyestuffs and optical bleaching agents for whitening textiles. Offers possibilities for synthesis of pharmaceuticals, explosives, rubber chemicals, high polymers, mothproofing agents, surface-active agents and plasticizers.

Features: Now in pilot plant production, compound has high degree of reactivity, somewhat resembling carboxylic acid chloride. Reactivity of chlorine atoms differs sufficiently to permit stepwise introduction of same or different substituents.

Description: Cyanuric chloride is a solid melting at 146°C. It does not decompose at its boiling point of 190°C. Slightly soluble in, and hydrolyzed by water. Soluble in most organic solvents. Reacts readily with compounds having labile hydrogen atoms, such as amines, alcohols, phenols, mercaptans and malonic esters.

Source: Manufactured by American Cyanamid Company, Dept. CP, 30 Rockefeller Plaza, New York 20, N. Y. . . . or for more information check CP 2020 on handy form, pages 2 and 3.

### Cation exchange resin features high adsorptive capacity, high flow rates . . .

material does not deteriorate in low-silica waters; is unaffected by acids, alkalies, boiling water

Uses: For water conditioning applications, and for use in special processes which require a high-capacity exchange resin with unusual physical and chemical stability.

Features: Does not deteriorate in waters of low silica-content. Unaffected by boiling water, and by contact with strong acids, alkalies, oxidizing or reducing agents.

Description: Resin shows adsorptive capacity of 30 kilograms per cu ft at efficient regeneration levels. Extremely efficient regeneration is reported with reduced capacity operation. Flow rates to 10 gal per cu ft per min. have been used with less than 5% reduction in capacity. Designated as Amberlite IR-120.

Source: Developed by Resinous Products Div. of Rohm & Haas Co., Dept. CP, Washington Sq., Philadelphia, Pa. . . . or for more information check CP 2021 on handy form, pages 2 and 3.

### Use rubber tubing, diaphragms, sleeves, gaskets, other items at very low temps. . . .

new silicon used in molded, extruded, punched parts; resists heat, cold, and compression

Uses: As gaskets, sleeves, diaphragms, tubing, packing, etc., for service under extreme conditions of heat, cold, compression, and chemical attack.

Features: Brittle points of new silicone rubbers range from -150°F to -170°F.

Description: Material lends itself to extrusion, molding, punching, and die or lathe cutting. Parts are recommended for applications involving continuous temperatures as low as -110°F. Tests indicate that these parts resist



**MANY  
PROCESSING  
TROUBLES  
CAN BE  
REDUCED  
WITH**

## SOLKA-FLOC

THE NEW, EASY-TO-USE  
FORM OF CELLULOSE

Solka-Floc — the purest, softest, whitest, strongest and most absorbent of wood cellulose fibres is ideal for the following uses:

1. AS PLASTICS FILLER—FOR HIGHEST COLOR STABILITY AND MAXIMUM MECHANICAL STRENGTH.
2. AS ABSORBENT CARRIER FOR LIQUIDS.
3. FOR FLOC PRINTING.
4. A FILLER IN WET SPREAD COATING.
5. AS FILTER AID.
6. AS CHEMICAL INTERMEDIATE.

Samples and Quotations will be furnished on request

## BROWN COMPANY

500 Fifth Avenue, New York 18, N.Y.  
Brown Corp., 908 Sun-Life Bldg., Montreal 2, P.Q., Canada

FOREMOST PRODUCERS  PURIFIED CELLULOSE

When inquiring check CP 2022 on handy form, pgs. 2-3

## MATERIALS

sulfur dioxide, liquid ammonia, and certain types of Freon, permitting use under almost any conditions of refrigeration.

Source: Produced by The Stalwart Rubber Co., Dept. CP, 221 Northfield Rd., Bedford, O. . . . or for more information check CP 2023 on handy form, pages 2 and 3.

### Apply aluminum anti-rust paint without wire brushing or scraping . . .

suitable for interior and exterior use; for brush or spray application

Uses: For interior or exterior application right over rust without wire brushing or scraping.

Features: Aluminum content double that of most aluminum paints. Described as having property of "leafing" on all surfaces and not turning brown under adverse weather conditions.

Description: This paint utilizes a recently developed aluminum paste which is reputed to be very bright and long lasting.

Source: Rustrem Super Aluminum Paint is made by Speco, Inc., Dept. CP, Cleveland, Ohio . . . or for more information check CP 2024 on handy form, pages 2 and 3.

### Workers stand comfortably when matting has sponge rubber backing . . .

noise absorption, reduction in breakage, better traction are additional advantages

Uses: For surer, safer footing for workers in front of machines and to ease strain of prolonged standing. May also be used to deaden noise and reduce breakage.

Features: Sponge rubber backing is of  $\frac{1}{8}$  inch thickness, greatly increasing comfort of workers who must stand at benches, conveyors, machines, etc.

Description: Matting is 36 inches wide and  $\frac{1}{4}$  inch thick. Available in 30 feet rolls.

Source: This corrugated rubber matting is made by The B. F. Goodrich Co., Dept. CP, Akron, Ohio . . . or for more information check CP 2025 on handy form, pages 2 and 3.

### Cast-iron filler-solder bonds at 500° F. adheres to rusty metal . . .

used for sealing leaks, filling holes, forming overlays; bonds to all metals but aluminum

Uses: As filler on repair jobs of almost any description; for sealing leaks, filling in holes, and adding new material to old and new base metals.

Features: Bonding temperature is only 500° F. Adheres to rusty, old metal as well as to clean, new metal.

Description: Solder is supplied in handy container, with coil of solder in top compartment, and a jar of special flux in bottom of container. Solder wire may be used on difficult, almost inaccessible jobs, without dismantling. Alloy bonds to ferrous and non-ferrous metals, except aluminum.

Source: Product of Eutectic Welding Alloys Corp., Dept. CP, 40 Worth St., New York 13, N. Y. . . . or for more information check CP 2026 on handy form, pages 2 and 3.



In the manufacture of pharmaceuticals (local and parenteral anesthetics are examples) . . . and in the preparation of cosmetics (like the creams and lotions that help dissolve the pigments in freckles)—glycerine's usefulness is constantly increasing. And here's why—

Glycerine's combination of physical and chemical properties can be matched by no other product. Glycerine is a carrier . . . a solvent . . . a softener . . . an emollient . . . a humectant . . . a preservative. It's safe. It's edible. It's nutritious. It can be applied, in proper dilutions, to *any* part of the body.

"When we're stumped," a leading chemical consultant writes, "we always try glycerine. You'd be surprised how often it works."

That's why—in the pharmaceutical, cosmetic and almost every industry—*Nothing takes the place of glycerine!*

## GLYCERINE PRODUCERS' ASSOCIATION

295 Madison Avenue  
NEW YORK 17, N. Y.

When inquiring check CP 2027 on handy form, pgs. 2-3

## Technical GLYCERINE NEWS

**GLYCERINE SECTIONS OF BEILSTEIN TRANSLATED!** Now available for the first time, an English translation of the Glycerine Sections of Beilstein's famous *Handbuch der Organischen Chemie* (4th Edition). Complete in one volume entitled "GLYCERINE AND SOME GLYCERINE DERIVATIVES." Publication authorized by the Attorney General of the United States. Compiled and edited by Dr. R. N. Du Puis, Dr. C. S. Miner, Jr. and J. B. Segur—long acknowledged as authorities in the field of Glycerine and its properties. Amassed in its 210 pages are an unusually large number of Glycerine derivatives with extensive cross-references. Also included are a complete table of contents and a detailed index of the derivatives and fatty acid esters of Glycerine. A timely, comprehensive volume for your chemical reference library. Order from the Glycerine Producers' Association enclosing \$2.50 (check or money order) for each copy.

★ ★ ★

**TO STABILIZE PENICILLIN AEROSOLS,** the addition of a small quantity of glycerine to a penicillin solution is recommended by a group of investigators. (D-13)

★ ★ ★

**AN ABRASIVE-FREE FABRIC-BASE RAZOR STROP** can now be made with a new chemical composition, according to a recent patent. The composition is said to contain beeswax, creosote, cresylic acid, an aryl-phenol, and glycerine among other ingredients. (D-14)

★ ★ ★

**A NEW MATERIAL FOR MEDICINAL CAPSULES** is described as containing hydrolyzed gluten, mineral oil, gelatin, glycerine and water. (D-15)

★ ★ ★

**STABLE EMULSIONS OF OIL AND GLYCERINE** can now be obtained by the addition of a small amount of prolamine as an emulsifying and stabilizing agent, a recent patent states. (D-16)

GLYCERINE PRODUCERS' ASSOCIATION, DEPT. 5  
295 MADISON AVENUE  
NEW YORK 17, N. Y.

I should like to receive information on the source of the items appearing in Technical Glycerine News. I have checked below those items which interest me.

D-13  D-14  D-15  D-16

NAME.....

COMPANY.....

ADDRESS.....

## Cheaper to Move Ammonia Cylinders by the Dozen with Fork Truck and Carrier Attachment



Hydraulically-operated carrier attachment lifts and holds cylinders as truck transports them

One man replaces 9 in transferring containers from filling to storage and then loading on highway truck

**PROBLEM:** At Shell Chemical Co., Pittsburg, Calif., a 9-man crew was required to move 350 lb. 15" ammonia cylinders from filling to storage and then to trucks. All this handling was entirely manual. It took 50 minutes to load a truck. It was essential that this entire operation be speeded up to conform with overall plant schedule.

**Solution:** Special cylinder carrier attachments for the plant's fork trucks were secured. These accessories attach easily to any make of standard 2000 lb. fork truck. No special tools are required and truck can quickly be re-converted for regular service if needed.

One worker easily performs the job of picking up twelve cylinders

at a time and loading them on a truck. He easily maneuvers the truck to cylinders, which have been assembled in uniform groups of twelve, and drops the carrier frame over them. The design of the carrier provides for any necessary slight adjustment so that cylinders and carrier will be in accurate position when hydraulic pressure is applied to make special holding clamps. These are faced with rubber which prevents slipping and protects the cylinders against damage. The cylinders are held with utmost security, as gravity wedge action, automatically proportioned to load weight, securely locks the cylinders for lifting and carrying.

Each gripping shoe is operated by its own hydraulic cylinder and working pressure is 1000 lbs. p.s.i.

**Results:** One man now moves cylinders from filling to storage and to truck, 12 at a time. Only 7 to 10 minutes is required to completely load one truck.

**Source:** Cylinder carrier, as well as similar attachments for handling two or four drums at one time, are built by Trayner-Reinhart, Dept. CP, 1627 Willow St., Oakland 7, Calif. . . . or for more information check CP 2028 on handy form, pages 2 and 3.

## Cut Unloading Time from 24 to 3 Hours per Car when Carton Shipments are Palletized

Paper mill utilizes existing truck equipment to best advantage under centralized rather than departmental control

**PROBLEM:** Pennsylvania paper manufacturer uses a large fleet of electric trucks in processing, storing, routing and loading of raw materials, pulp and paper. Trucks were originally operated on a departmental control system. Each superintendent was responsible for his own material handling requirements.

A plant survey revealed that, under this system, the electric truck equipment was not being utilized to full ca-

pacity; that materials were not moving in the maximum volume that the truck fleet should handle; that operating efficiency was hampered by inadequate maintenance and that safety factor was not maintained at a satisfactory level.

Finally, the wide diversity of products, and varying sizes of packages, added to the difficulties of the handling operations.



Moving pallet loads of bagged starch to storage; sacks are "locked" to prevent side-slipping

**Solution:** One of the first steps taken to improve the situation was adoption of pallet-fork method for handling raw, in-process and finished products. Materials such as clay, starch and talc are received in bags. Substantial savings were made by palletizing these bags on arrival, and transporting unit loads by fork truck to storage and production. Still further savings are anticipated when all suppliers can be persuaded to ship materials on pallets.

Palletizing also results in cutting unloading time of knock-down shipping cartons from 24 hours per car, when they arrived loose, to approximately 3 hours, since they arrive in unit loads strapped to pallets, permitting fork-truck handling.

A new warehouse was designed and constructed around a mechanized system of handling unit loads. Tractor-trailer trains are assisted by fork trucks, permitting efficient, orderly storage, full utilization of space and speeding order assembly for shipment.

#### Trucks Inherently Safe

Trucks used in this system are five electric elevating fork-type units. They are equipped with a number of safety features which include a patented controller, and a safety interlock contactor. Safe operation of the truck is provided with the controller which prevents accidental plugging from forward to reverse. The contactor is interlocked with the controller and eliminates the possibility of injury or damage from starting without operator in position. The circuit can close only with brake released and controller in first speed position. Short turning radius and brakes of the combination hydraulic service and mechanical parking type contribute to easy and precise maneuvering of loads.

**Results:** Full utilization of trucks and personnel. Greater volume handled without any additional equipment. Palletizing bagged material on arrival has speeded its movement through the plant. It now takes 14 hours to palletize a car of 1600 bags, each weighing about 50 lbs. It is now planned to have this material arrive on pallets, which will permit unloading and warehousing in about 2 hours per car.

With all handling under one control, rather than departmental control, work flow has been made more efficient and direct. With all handling under one control, proper allotment assures adequate equipment for all departments.

**Source:** Electric trucks around which this handling system is designed are built by Baker-Raulang Co., Dept. CP, 1250 80th St., Cleveland 2, Ohio . . . or for more information check CP 2029 on handy form, pages 2 and 3.

#### Mobile, inclining belt conveyor features telescoping center-lift

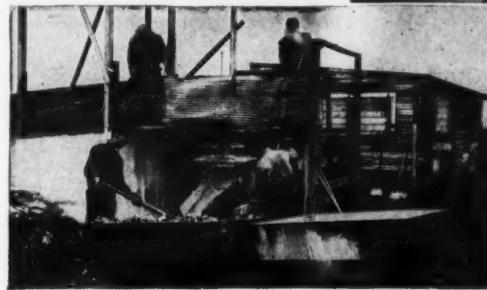
Four-page, 2-color bulletin covers features of line of mobile, inclining, powered belt conveyors. Pitch control assembly on all models is single screw, adjusted by hand-wheel. Hydraulic center lift is telescoping; actuating hydraulic pump handle accomplishes quick, positive center adjustment. Nosed-over delivery section controls travel of cartons, boxes, etc., from inclined to horizontal plane. Power driven horizontal feeder section is available on deluxe model.

Rubber covered belt is pictured in action, conveying smooth cartons up 27° incline. Photos illustrate types and point out construction details. Tables give dimensions, weights, and ranges of adjustment.

Bul. RPB-49-R, issued by The Rapids-Standard Co., Inc., Dept. CP, Grand Rapids 2, Mich. When inquiring specify CP 2030 on handy form, pages 2 and 3.

# HOW MAN DAYS WERE REDUCED TO MAN HOURS!

**The Brooks Load Lagger will hoist, dump or lower a fully loaded truck body in 15 seconds.**



**Old brick, asphalt, etc. is reprocessed here, drops out of crusher directly into Brooks bodies—no re-handling necessary.**



**Brooks Load Lagger has 1000 other uses—is particularly adaptable for use in and around industrial plants.**



**BROOKS EQUIPMENT & MFG. CO. • 607 DAVENPORT RD. • KNOXVILLE, TENN.**

When inquiring check CP 2031 on handy form, pgs. 2-3

YOU TO INVESTIGATE	
BROOKS EQUIPMENT & MFG. CO., 607 DAVENPORT RD., KNOXVILLE, TENN.	
<input type="checkbox"/> Please send literature showing wide range of Load Lagger uses. <input type="checkbox"/> Please send your representative to survey our plant—no obligation.	
NAME.....	TITLE.....
COMPANY.....	
ADDRESS.....	

**YALE MIDGET KING  
ELECTRIC HOIST  
OPERATES FOR A  
FEW CENTS A DAY**

• Adds economy to the time and effort saving efficiency of electric hoist operation.

• Compact, strong and durable. Has lifetime gears and precision ball bearings.

• One-hand bar-grip control leaves one hand free to guide the load.

• Load brake interlocked with motor brake for double safety.

• Capacities from  $\frac{1}{2}$  to 2 tons.

Bulletin sent  
on request



**YALE** THE YALE & TOWNE MANUFACTURING CO.  
Roosevelt Boulevard • Philadelphia 15, Pa.  
HAND LIFT AND POWER TRUCKS • HAND AND ELECTRIC HOISTS • INDUSTRIAL DIAL SCALES

When inquiring check CP 2032 on handy form, pgs. 2-3



• The following example outlines a simple method for determining savings possible with a Baker Truck. The problem is to transport daily 180 tons of material from storage to production.

WITH HAND TRUCKS this would require 10 truckers, each making 10 round trips per hour (80 per day) carrying 450 lbs. per load. WITH BAKER TRUCK this would require 1 operator making 24 round trips per hour for  $7\frac{1}{2}$  hours, carrying 1 ton per trip. Investment for 2000 lb. fork truck, battery, charger and 200 pallets -\$6240.00. Depreciation, maintenance, electricity, insurance, etc., would cost \$1209.00 per year (\$4.03 per day).

**Cost of Handling 180 tons per day:**

Without Truck	With Truck
Labor (85¢ per hour) ....	\$68.00
Social Security .....	2.72
Compensation .....	1.00
Hand Truck Depr. ....	.30
Total	\$72.02
Savings per day \$59.51, per ton 33.2¢.	
Total Savings per year \$17,853.00	
Percent reduction in handling costs 83%	
Annual Earnings on investment 286%	

Baker Material Handling Engineers are prepared to show you how similar savings can be made in your plant.

**BAKER INDUSTRIAL TRUCK DIVISION**  
of The Baker-Rausch Co.  
1208 WEST 80th STREET CLEVELAND, OHIO

**Baker INDUSTRIAL TRUCKS**

When inquiring check CP 2033 on handy form, pgs. 2-3

## Self-adjusting Ramp Requires No Compressors; Installs Easily; Has 24" Travel

Heavy framework protects movable ramp section, absorbs impact of highway trucks

**USES:** As an easily adjustable ramp to facilitate loading and unloading trucks.

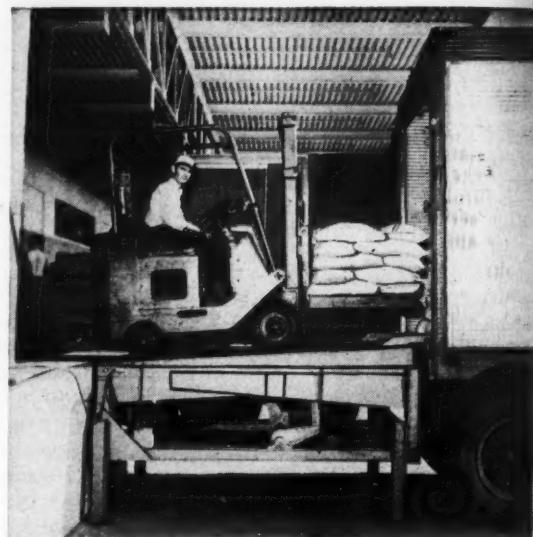
**Features:** No expensive air compressors or hydraulic systems required. No scissor-openings at sides to catch fingers or toes. Ramp's movable center section is completely encompassed in an indestructible framework of welded 6" I-beams. Thus, regardless how hard a truck may back into it, impact is absorbed by framework and not by the movable ramp section.

A unique floating action is incorporated into the "gap" plate, at the forward end of the ramp, to compensate for any unevenness in horizontal level of the truck's bed. Thus, even though one side of truck is lower than the other, a smooth roll on and off the ramp is assured.

**Description:** Ramp is hydraulically operated. The lift cylinder is placed in a horizontal position as an integral part of the ramp itself. No special provisions of any kind are required to place the ramp into position either ahead of, or into, any existing shipping platform. (If the ramp is to be set into the platform, it is only necessary to excavate to a depth of  $2\frac{1}{2}$  feet, no more). As the unit is operated by  $\frac{1}{4}$  hp motor, it plugs into ordinary light socket.

In operation, when ramp has been lowered into position so that the hinged pads at the ends of the load arms are resting on the floor of the truck, the weight traversing the ramp is transmitted to the truck's rear springs. Ramp and truck bed flex together in harmony as loads are moved.

Standard dimensions of ramp are: width, 6'; length, 8'. Ramps can be made in other sizes. Range of ramp's travel



Ramp and truck bed flex together, as loads up to 10 tons are moved

is 24". In standard installations this is split 12" up and down, but can be varied to suit application, if desired.

**Source:** "Dock-Master" is built by William Ehlers, Dept. CP, 301 East Regent St., Inglewood, Calif. . . . or for more information check CP 2034 on handy form, pages 2 and 3.

### Full information on maintenance of storage batteries

Series of technical reprints, suitable for bulletin board use or for reference material, gives complete information on installation and maintenance of storage batteries. Literature on cycle-duty batteries, or batteries which are regularly discharged and recharged, such as those which power electric trucks, includes photos and record charts, and discusses 8 primary rules of maintenance. Reprints which discuss stationary batteries, or batteries which float in a powered circuit, also contain photos which demonstrate maintenance principles and installation techniques. Stationary type record card is included.

"Cycle-duty Battery Maintenance" and "Stationary Battery Maintenance" are issued by Gould Storage Battery Corp., Dept. CP, Stone and Calhoun Sts., Trenton 7, N. J. When inquiring specify CP 2034A on handy form, pages 2 and 3.

### Move pallet, skid, trailer-loads with all-electric trucks, tractors . . .

all controls for lifting and travel are located in handle for quick, easy maneuvering

**Uses:** For handling heavy skid, pallet and trailer loads.

**Features:** All three of these battery-powered units have finger tip control, and travel at uniform speeds, with or without loads. All maneuver easily and precisely. Motors, relays, bearings, etc., are all completely enclosed, yet are instantly accessible for lubrication and service. Truck units lift and lower electrically, handle loads gently. Pallet units may be used with either single or double faced pallets.

**Description:** First of the three units, an electric lift truck, is built in capacities of 4000 and 6000 lbs., and is available with lifting platforms 20" or 25" wide and in a range of lengths. Drive wheel is 10" in diameter and has

5" face. Unit has Timken bearing, oversize 14" diameter adjustable turntable. Rotary type hydraulic pump provides 4" lift in 4 seconds.

Pallet truck is built in same capacities as lift truck and with fork lengths from 36" to 60". Auxiliary rollers mounted forward of forks permit easy entrance and withdrawal from the pallet whether empty or loaded.

The tractor has a 20,000 lb. rolling capacity and a 700 lb. drawbar pull. Two speeds forward, two reverse. Auto-



Electric truck moves loads on single or double pallets

mobile type brake applied with handle in either vertical or horizontal position. Heavy duty bumper plate. Trailer attachment to suit requirements.

Bulletin 4861 gives complete details on all three units.

Source: Barrett-Cravens Co., Dept. CP, 4613 South Western Ave., Chicago 9, Ill. . . or for more information check CP 2035 on handy form, pages 2 and 3.

#### 16' aluminum conveyor weighs only 100 lbs., including gasoline engine . . .

adapts to different positions; handles bulk materials; handy with bins or trucks

Uses: For bulk materials.

Features: Weight approximately 100 lbs. with gasoline engine, slightly more with electric motor. Made of high-strength rust-proof aluminum alloy.

Description: Length, approximately 16 feet. Gasoline engine furnished in one-horsepower, 2-cycle, air-cooled.

Electric motor optional choice, is  $\frac{1}{2}$  horsepower, 110-220 volt 3450 rpm, capacitor single phase. elevator can be used with hopper-end on ground, or hooked to floor-bed, tailgate or sideboard of truck. A bail is provided for raising and lowering, or hanging

Rust-proof aluminum conveyor  
in position by rope.

Hopper sides are removable so that loading-end can pass through small opening or be used for self-loading.

Source: Burrows Equipment Co., Dept. CP, 1316 Sherman Ave., Evanston, Ill. . . or for more information check CP 2036 on handy form, pages 2 and 3.

JULY, 1949



## Taking the "PUCKER" out of Alum Handling

This specially designed S-A conveyor system takes the "Pucker" . . . the back-breaking work . . . out of alum handling at this modern plant. 100 lb. bags of alum go from car to storage in only 30 seconds . . . with no spoilage by weather.

The broad experience of S-A engineers in the design of conveying systems always results in low cost efficient installations. Each system is designed to meet specific requirements . . . to handle maximum tonnage at lowest cost.

You'll want the recommendations of this trained staff of S-A engineers . . . whether you plan to install a new unit or want an entirely new bulk materials handling system. Write today.

Alum, in 100 lb. paper bags, slides from car down chute to lower end of a 92 foot long S-A flat belt conveyor which conveys bags at the rate of 15 TPH to 3rd floor storage. This complete S-A conveyor system is entirely under cover . . . permits handling of bagged chemicals in any kind of weather.

**STEPHEN S-A DAMSON**

11 Ridgeway Avenue, Aurora, Illinois MFG. CO. Los Angeles, Calif. • Belleville, Ontario

DESIGNERS AND MANUFACTURERS OF ALL TYPES OF BULK MATERIALS HANDLING EQUIPMENT

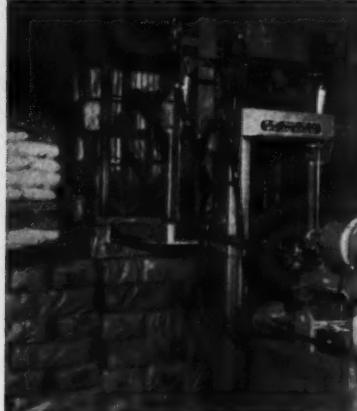
When inquiring check CP 2037 on handy form, pgs. 2-3

**Unloader moves bags from pallet to stack in one simple operation . . .**

attaches to electric or gas fork trucks; saves labor, speeds spotting loads in cars or storage

**Uses:** For use on all fork trucks, both electric and gasoline operated, in unloading bagged and other packaged materials from pallets, or directly from the truck forks.

**Features:** Ability to unload paper sacks, containing fragile materials, without damage. Rapid, precision operation. Hydraulic cylinders extend the unloading platen full length of its travel — 42 inches — in just 15 seconds.



Unloader operates at any height within the range of any standard fork truck

link mechanism, which extends the platen 42 inches. A pallet gripping mechanism is synchronized with the platen so that the whole sequence of operation is automatic and controlled by a single automatic switch or pilot-operated valve.

A special feature of the pallet gripping mechanism is, that regardless of the position of the pallet, the mechanism



Loader platen extended, showing mechanism and one of hydraulic cylinders

adjusts itself to the pallet before the gripping jaws come into operation. (Two simple cross latch plates are attached to the center cross member of each pallet used with the unloader.) If pallets are not used, the unloader can be supplied without the gripping mechanism.

The operating feature that makes possible the handling of packages on the rough surface of the pallet without damage, is that when platen is pushed against the load, the whole pile is held against the previous stack or box car wall. There is then, not sufficient weight bearing on the

# Greater Service to Fork-Truck Users

## Greater Opportunities for Men Who Sell Them —

### Clark Dealer Plan Achieves Both

**W**ITH sales of its fork lift trucks and industrial towing tractors exceeding all expectations, and with its position of production and engineering leadership firmly rooted in rich, productive soil, Clark Equipment Company, in its 30th year as a builder of materials-handling machines, has found it desirable to establish a nation-wide organization of independent franchised dealers as exclusive distributors of the products of its Industrial Truck Division.

**T**HIS is indeed a far cry from 1939 when the entire output of the Industrial Truck Division was sold with ease by a handful of men!

**T**ODAY'S volume is twenty times that of 1939; and the Company's stature—financial and engineering—is more than twenty times as great as in 1939. A considerable number of the '39 machines are in daily service, and many older machines are in regular operation after 20 and 25 years. The conviction is natural that 30 years hence many '49 machines will still be "on the job" alongside the new output of 1979. There will be no "orphans" bearing the name "Clark."

**T**O KEEP PACE with increasing demands, and to deliver the broad and competent service which Industry expects from Clark, the Company has chosen this plan of selling through independent dealers as a sound and logical evolution. Until the middle of 1948, approximately one-third of Clark's Industrial Truck Division representatives were on an independent dealer basis. It is expected that by the end of

1949 the nation-wide dealer organization will be complete.

**H**EADING up the dealerships or actively participating in them are key men of Clark's erstwhile factory-branch sales offices—factory-trained men, tested and proved as capable materials-handling counselors. These men share with Clark management the conviction that they can deliver, under the new plan, a broader and more valuable service to their customers and to all users of mechanized materials-handling; that they face broader, deeper vistas of opportunities which ambitious men so earnestly desire—opportunities for independence, for building greater earnings by their own efforts, for achieving prestige and leadership in their communities.

**A**NOTHER influence which furthered the plan is the fact that Clark management historically has been engineers and manufacturers. By decentralizing marketing activities, Clark can intensify its emphasis on development of better materials-handling machines and methods—to the end that Clark products shall achieve even higher excellence at lower cost, shall become still more valuable to industrial users and to the dealers who serve them.

**T**HROUGH your Clark dealer, all the advantages of Clark engineering, integrated production and matchless experience are quickly available to you. He is fully qualified to make an unbiased appraisal of your materials-handling operations, and to recommend the type of machine that will serve you most efficiently at lowest cost. It's "good business" to CONSULT CLARK.

## CLARK EQUIPMENT COMPANY INDUSTRIAL TRUCK DIVISION BATTLE CREEK 9, MICHIGAN

OTHER PLANTS—BUCHANAN • JACKSON • BERRIEN SPRINGS, MICHIGAN  
REPRESENTATIVES IN PRINCIPAL CITIES THROUGHOUT THE WORLD

### AUTHORIZED CLARK DEALERS

<b>ALABAMA: BIRMINGHAM</b>	<b>M-H EQUIPMENT COMPANY</b>
	845 LOMB AVENUE
<b>ARIZONA: PHOENIX</b>	<b>ROBERT H. BRAUN COMPANY</b>
	743 GRAND AVENUE
<b>ARKANSAS: LITTLE ROCK</b>	<b>FRED J. VANDERMARK COMPANY</b>
	200 EAST MARKAM STREET
<b>CALIFORNIA: FRESNO 1</b>	<b>ROBERT H. BRAUN COMPANY</b>
	505 MASON BUILDING
	LOS ANGELES 23
	*ROBERT H. BRAUN COMPANY
	3008 EAST OLYMPIC BLVD.
	OAKLAND 3
	*GLENN L. CODMAN COMPANY
	10521 PEARMAIN STREET
	SAN DIEGO
	ROBERT H. BRAUN COMPANY
	3827 FIFTH AVENUE
	STOCKTON
	GLENN L. CODMAN COMPANY
	409 BELDING BUILDING
<b>COLORADO: DENVER 2</b>	<b>J. N. MEADE</b>
	420 U. S. NATIONAL BANK
	Services: FORK LIFT TRUCK SERVICE
	2858 WEST 8TH AVENUE
<b>CONNECTICUT: NEW HAVEN</b>	<b>*C. E. REUTTER CORPORATION</b>
	66 AMITY ROAD
<b>FLORIDA: TAMPA</b>	<b>CLARK EQUIPMENT COMPANY</b>
	1145 ELLAMAE STREET
<b>ILLINOIS: CHICAGO 4</b>	<b>*MODERN HANDLING EQUIP., INC.</b>
	310 SOUTH MICHIGAN AVENUE
	(Service: Cook County)
	LIFT TRUCK SERVICE COMPANY
	6918 SOUTH HALSTED STREET
<b>INDIANA: INDIANAPOLIS 5</b>	<b>*MATERIALS HANDLING EQUIP. CO. OF</b>
	W. A. MARSCHKE & SONS
	1121 E. 46TH STREET
	SOUTH BEND 14
	*MATERIALS HANDLING EQUIP. CO. OF
	SOUTH BEND, IND.
	2625 SOUTH MICHIGAN STREET
<b>IOWA: DAVENPORT</b>	<b>*BIG RIVER EQUIPMENT CO.</b>
	1344 WEST 13TH STREET
	DES MOINES
	*BIG RIVER EQUIPMENT CO.
	914 GRAND AVENUE, ROOM 255
<b>KANSAS: KANSAS CITY</b>	<b>Sales and Service:</b>
	(SEE KANSAS CITY, MISSOURI)
<b>LOUISIANA: NEW ORLEANS</b>	<b>T. G. FRAZEE</b>
	910 CARONDELET BLDG.
<b>MAINE: PORTLAND</b>	<b>BRIDIE INDUSTRIAL TRUCKS, INC.</b>
	(CONTACT MALDEN, MASS.)
<b>MARYLAND: BALTIMORE</b>	<b>FALLSWAY SPRING &amp; EQUIPMENT CO.</b>
	CORNER FALLSWAY & LEXINGTON
<b>MASSACHUSETTS: BOSTON (MALDEN 48)</b>	<b>*BRODIE INDUSTRIAL TRUCKS, INC.</b>
	50 COMMERCIAL STREET, MALDEN 48
<b>MICHIGAN: BATTLE CREEK</b>	<b>CLARK EQUIPMENT COMPANY</b>
	INDUSTRIAL TRUCK DIV. PLANT
	DETROIT 2
	*CLARK EQUIPMENT COMPANY
	6520 CASS AVENUE
	Services: INDUSTRIAL TRUCK SERVICE, INC.
	8815 HARPER AVENUE
<b>MINNESOTA: MINNEAPOLIS 2</b>	<b>*MATERIAL HANDLING ENGINEERS</b>
	226 SOUTH 5TH STREET, ROOM 201
	<b>Services: SMITH-DUNN COMPANY, INC.</b>
	2301 UNIVERSITY AVENUE, S. E.
<b>MISSOURI: KANSAS CITY 6</b>	<b>*CLARK EQUIPMENT COMPANY</b>
	1009 BALTIMORE AVENUE
	<b>Services:</b>
	LIFT TRUCK SERVICE & SUPPLY
	NORTHWEST 15TH AND McGEE STREETS
	ST. LOUIS 8
	*MATERIALS HANDLING EQUIPMENT CORP.
	3820 WASHINGTON BLVD.
	<b>Services:</b>
	FORK LIFT TRUCK SERVICE CO.
	511 CHANNING STREET

When inquiring check CP 2038 on handy form, pgs. 2-3

## MATERIAL HANDLING

## AUTHORIZED CLARK DEALERS

**NEW JERSEY: JERSEY CITY**  
\*JERSEY INDUSTRIAL TRUCKS, INC.  
34 EXCHANGE PLACE

**Service:**  
BOND INDUSTRIAL MAINTENANCE CO.  
51 CLARKSON STREET AT GREENWICH  
NEW YORK 14, NEW YORK

**NEW YORK: BUFFALO**  
\*BRODIE INDUSTRIAL TRUCKS INC.  
1450 MICHIGAN AVENUE  
NEW YORK 6

\*BOND INDUSTRIAL EQUIPMENT CO.  
165 BROADWAY, ROOM 2200 (OFFICE)

**Service and Display Room:**  
51 CLARKSON STREET AT GREENWICH  
NEW YORK 14—also  
209 BOND STREET, BROOKLYN 31

**SYRACUSE**

BRODIE INDUSTRIAL TRUCKS INC.  
712 STATE TOWER BLDG.

ALBANY (WATERVLIET)

\*INDUSTRIAL TRUCK SALES, INC.  
BROADWAY AT 25TH, WATERVLIET

**NORTH CAROLINA: GREENSBORO**

**Service Outlet only:**  
INDUSTRIAL TRUCK SERVICE CORP.  
629 SOUTH SPRING STREET

**OHIO: CINCINNATI**

ROBERT C. YOUNG, P. O. BOX 96  
CLEVELAND

CLARK EQUIPMENT COMPANY  
522 ROCKEFELLER BLDG.

TOLEDO 10

PERCIVAL L. REYNOLDS, 2558 FULTON STREET

**OKLAHOMA: TULSA**

ARST EQUIPMENT COMPANY  
34 NORTH MADISON

**OREGON: EUGENE**

PRESTON FALLER COMPANY  
891 TAYLOR STREET

PORTLAND 5

PRESTON FALLER COMPANY  
1220 S. W. MORRISON STREET

**PENNSYLVANIA: PHILADELPHIA 8**

\*CLARK EQUIPMENT COMPANY  
401 NORTH BROAD STREET

**Service:**

PHILADELPHIA ENGINE REBUILDERS, INC.  
330 WEST QUEENS LANE

PITTSBURGH

\*MATERIAL HANDLING INCORPORATED  
319 THIRD AVENUE

**SOUTH DAKOTA: SIOUX FALLS**

CENTURY EQUIPMENT & SUPPLY CO.  
22 WEST 7TH STREET

**TENNESSEE: MEMPHIS 3**

\*FRED J. VANDERMARK COMPANY  
1110 UNION AVENUE

**TEXAS: DALLAS**

\*T. G. FRAZEE  
1012 FIRST NATIONAL BANK BLDG.

**Service:**

TRUCK EQUIPMENT COMPANY  
2409 COMMERCE STREET

HOUSTON

\*T. G. FRAZEE, 810 PETROLEUM BLDG.

**UTAH: SALT LAKE CITY**

A. J. ISAACSEN, JR.  
45 SOUTH 3RD WEST STREET

**VIRGINIA: NORFOLK**

\*MCLEAN-SHAND, INC.  
955 WEST 21ST STREET

**WASHINGTON: SEATTLE 1**

\*PRESTON FALLER COMPANY  
1921 MINOR AVENUE

SPOKANE 9

PRESTON FALLER COMPANY  
EAST 41 GRAY AVENUE

**WISCONSIN: MILWAUKEE 2**

\*CLARK EQUIPMENT COMPANY  
759 NORTH MILWAUKEE AVENUE, ROOM 623

**Service:** LIFT TRUCK SERVICE CO.

5710 WEST NATIONAL AVENUE

**DISTRICT OF COLUMBIA: WASHINGTON**

CLARK EQUIPMENT COMPANY

927 15TH STREET N. W.

**TERRITORY OF HAWAII: HONOLULU**

\*PRESSED STEEL CAR COMPANY  
538 REED LANE, P. O. BOX 300

**Sales and Service.**

For Names and Addresses of Export Distributors, write  
to: Export Division, Clark Equipment Co., Battle Creek,  
Mich., U.S.A.

pallet to cause friction sufficient to tear sacks, and the truck is actually pushing away from a stationary load. The pallet is held until the platen is fully retracted and then it is automatically released and is free on the forks to be stacked, or used for the next load.

**Source:** Pallet Unloader is built by Hauser Machine Co., Dept. CP, Fort Worth 11, Texas . . . or for more information check CP 2039 on handy form, pages 2 and 3.

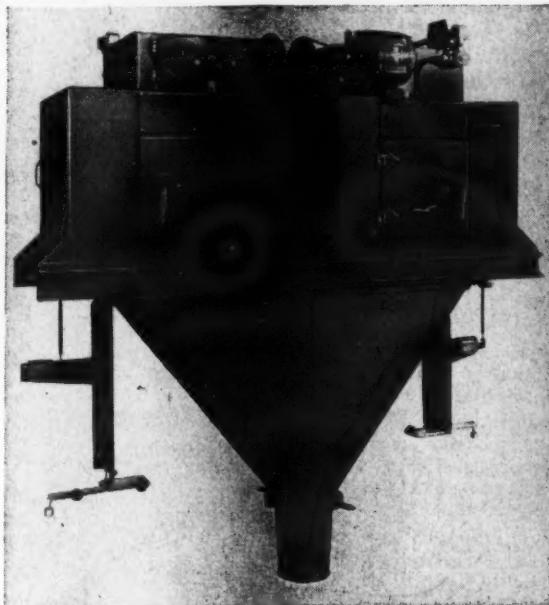
**Gravity or power feed used  
in high-speed bag-filling  
with duplex scale . . .**

normal range is 5-25 lbs. and 25-50 lbs; unit is entirely enclosed and explosion-proof

**Uses:** Accommodates gravity or power feed arrangements for bagging chemicals and many other materials normally put up in open-mouth paper or textile bags.

**Features:** Exceptionally fast action handling 24 10-lb. bags, and 18 25-lb. bags per minute, speeds varying with the type of material, method of feeding and size of unit being weighed. Machine is totally enclosed to provide dustproof operation, and all electrical construction is explosion-proof.

**Description:** Model E50 Duplex Bagger embodies two scales with a common bagging spout. It has a normal



High-speed bagging scale is supplied with slip-on spouts for use in filling bags of various sizes

range from 5 lbs. to 25 lbs. and from 25 lbs. to 50 lbs. Units of greater capacities can be furnished for special applications. Electrical construction conforms to requirements of the National Electric Code and National Board of Fire Underwriters for Class 2, Group G hazardous locations.

The scale can be used independently, or as part of a co-ordinated packing system.

**Source:** Model E-50 Duplex all electric bagging scale is made by Richardson Scale Co., Dept. CP, Clifton, N. J. . . or for more information check CP 2040 on handy form, pages 2 and 3.

**Why use Manpower for  
moving materials when  
DRACCO Pneumatic Conveyors  
will do it Cheaper and Better?**



Consult  
DRACCO  
Engineers

DRACCO Pneumatic Conveyors are economical for small as well as large operations. They move chemicals, grains and granular materials from receiving to storage in any part of plant, even up many floors. Materials may be moved from one building to another, under or over streets or railroad tracks. DRACCO Pneumatic Conveyors are CHEAPER and BETTER than manpower. In face of keen competition it is good business to make every possible saving. Why not consult DRACCO Engineers and have them check your present methods. They can probably save you money.

For Further Information Write

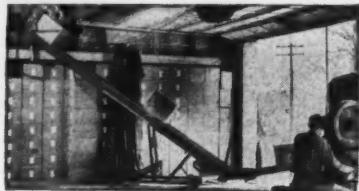
**DRACCO CORPORATION**

4060 E. 116th St., Cleveland 5, Ohio      New York Office 130 W. 42nd St.

**DUST CONTROL EQUIPMENT  
PNEUMATIC CONVEYORS • METAL FABRICATION**



use Buschman Conveyors



Yes, all you need is one man at the stockpile and one man in the truck to receive the load. You'll save steps and time . . . enough time to pay for your conveyor again and again.

The new Buschman TROJAN Portable belt conveyor and Buschman standard roll or wheel conveyor units give you a handling team that's really versatile . . . THE TROJAN is quickly and easily changed from job to job. Sturdy construction, an unusual unit priced right. Feeder belt optional.

For full details write for Bulletin No. 50.

**Buschman**  
*Conveyors* THE E. W. BUSCHMAN CO., INC.  
Spring Grove & Clifton Aves. Cincinnati 32, Ohio  
When inquiring check CP 2042 on handy form, pgs. 2-3

This catalog insert describing the  
Hapman Cable-Veyor sent on request.

**HAPMAN**  
**CABLE-VEYOR**  
Dustproof Self-Cleaning  
FOR  
**FLOWABLE** MATERIALS



Designed and engineered to meet your requirements for a dust-proof, corrosive resistant and extremely sanitary conveyor to handle all types of FLOWABLE materials at low cost per cubic foot. Positive material movement is secured at speeds from 5' to 300' on vertical, horizontal or inclined planes and around curves. Oversize flights scrape inside of steel tube regardless of direction or path of travel.

**HAPMAN CONVEYORS, Inc.**

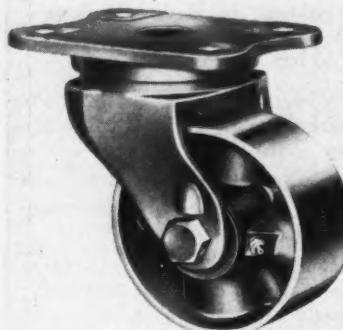
2405 W. McNichols Rd. • Detroit 21, Mich.

When inquiring check CP 2043 on handy form, pgs. 2-3

## MATERIAL HANDLING

**Carry 1500-2000 lb. loads on forged steel casters . . .**

made in 5, 6 and 8" diameter wheel sizes



Forged steel precision caster  
type of enclosed main load bearings and Timken thrust bearings.

Description: Made in 5", 6" and 8" diameter sizes.

Source: Bassick Co., Dept. CP, Bridgeport, Conn. . . . or for more information check CP 2044 on handy form, pages 2 and 3.

Uses: For operating loads of 1500 to 2000 lbs. per caster, and to carry safely any load that can be moved on any given size of wheel.

Features: Improved construction which utilizes extreme strength of forged steel frame and top plate. These casters use highest quality unit bearings.



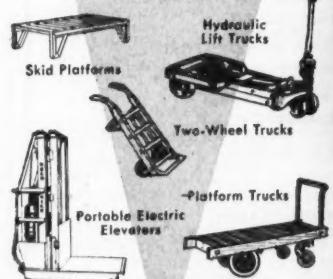
## Pallet-Type HYDRAULIC LIFT TRUCKS

Savings of 50% and more in materials handling labor and time may be yours, too, with the aid of WELD-BILT Pallet Trucks!

They're easy to move, simple and safe to operate — with full ball bearing equipment, multi-stroke hydraulic action, and many exclusive features. And every detail is keyed to tough use and long service. For single or double faced pallets in capacities to two tons.

Write or wire for prices today . . . or for engineering assistance in any of your materials handling problems.

### WELD-BILT Equipment Includes:



Tiering Machines and Special Equipment.

## WEST BEND EQUIPMENT CORPORATION

Materials Handling Engineers

319 Water St., West Bend, Wisc.  
When inquiring check CP 2045  
on handy form, pgs. 2-3

## MATERIAL HANDLING

Without the auxiliary device it would be difficult for a power truck alone to lift or transport loads of this type without overhead gripping hooks on cables or chains.

For many lighter applications, a pair of "Rol-a-lifts" — one under each end of the load — is satisfactory. This method, however, does require more time and labor than the use of one "Rol-a-lift" and a power truck.

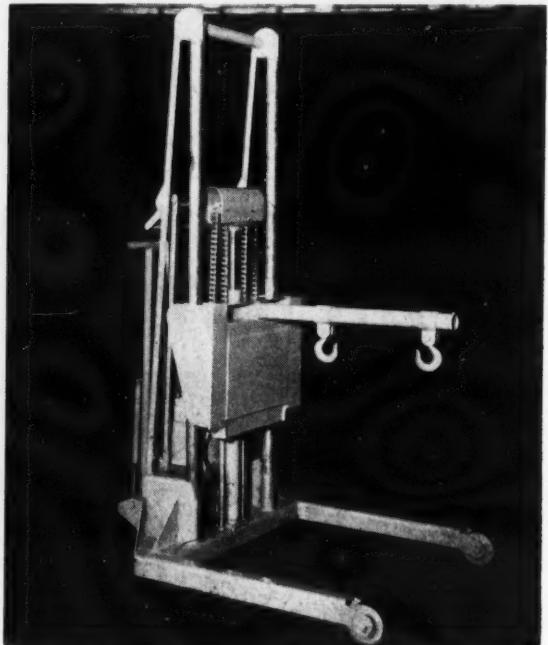
Source: Elwell-Parker Electric Co., Dept. CP, 4205 St. Clair Ave., Cleveland, Ohio . . . or for more information check CP 2046 on handy form, pages 2 and 3.

### Packing of heavy, delicate objects simplified by boom truck . . .

special flow control valve assures accurate control while load is being lowered

Uses: Especially suitable for handling heavy, delicate loads, such as electric instrument assemblies or other objects that can be raised by an elevating boom.

Features: A special flow control valve is provided to increase accuracy of control while load is being lowered. In actual service in handling electrical instrument assemblies, damage has been eliminated and speed of the packing operation increased.



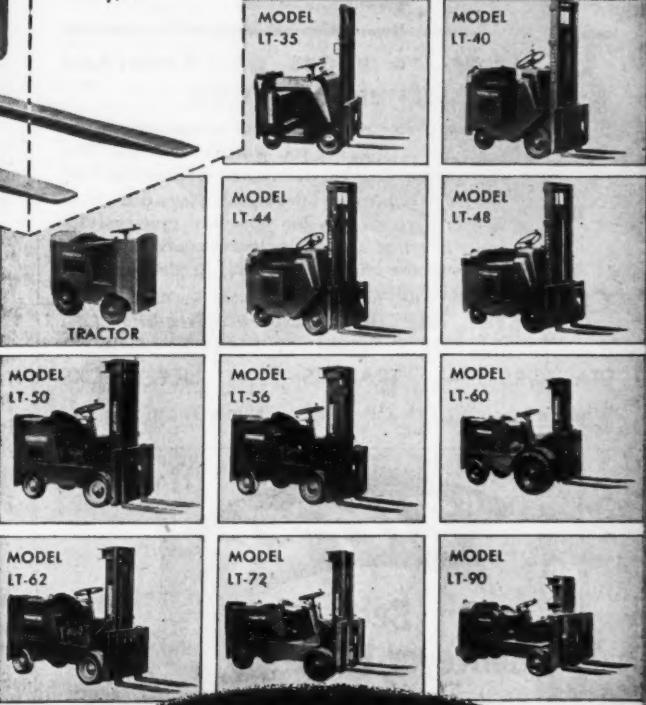
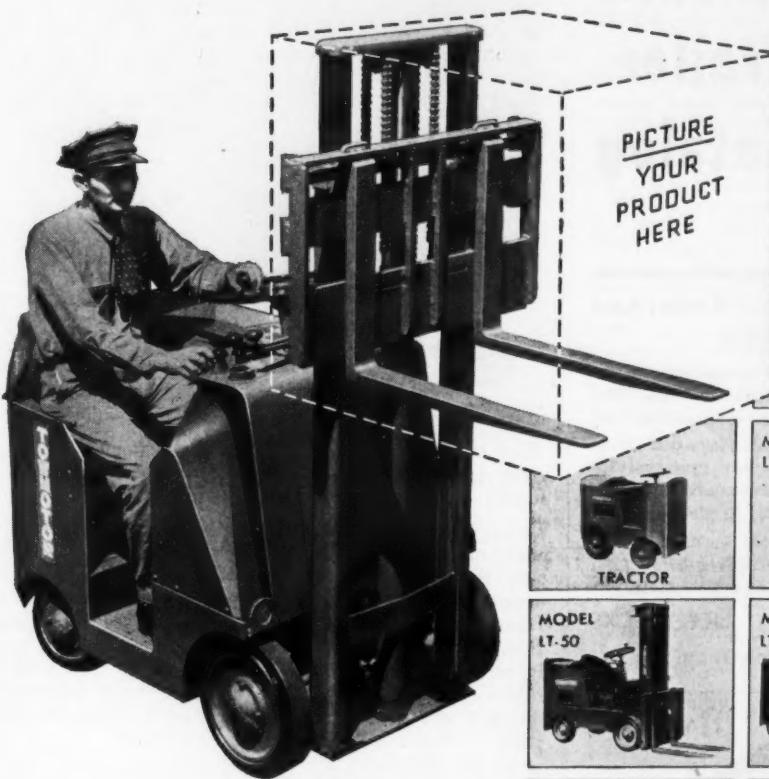
Truck has elevating boom for safe raising, lowering of heavy, delicate assemblies

Description: The general design of the truck is patterned after the manufacturer's standard hydraulic high lift truck. However, an elevating boom has been substituted for the regular 24" x 30" platform. Base forks are widened to accommodate shipping container.

The hydraulic elevating boom elevates from 16 inches in a lowered position, to a maximum height of 70 inches. A special sling arrangement to lift assemblies is fastened to two hooks suspended from the boom. The load is lifted by means of a hand pump actuating a hydraulic hoist.

Source: LYON-Raymond Corp., Dept. CP, 2001 Madison St., Greene, N. Y. . . . or for more information check CP 2047 on handy form, pages 2 and 3.

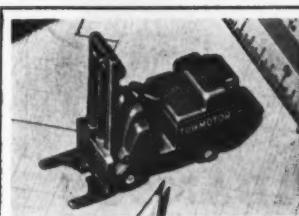
# Get MAXIMUM PRODUCTION from both men and machines with TOWMOTOR



**TOWMOTOR**  
THE ONE-MAN-GANG

## FORK LIFT TRUCKS and TRACTORS

RECEIVING • PROCESSING • STORAGE • DISTRIBUTION



Redesign your plant layout in miniature . . .  
Determine in advance how you can use Towmotor Fork Lift Trucks to best advantage. Send today for

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**TOWMOTORS**

actual scale  $1\frac{1}{4}'' = 1' \$1.00$  each

TOWMOTOR CORPORATION • Division 23, 1226 E. 152nd St., Cleveland 10, Ohio • Representatives in all Principal Cities in U. S. and Canada

When inquiring check CP 2048 on handy form, pgs. 2-3

## JUST OFF THE PRESS!



### Mercury SPECIALIZED Trailer Catalog

#### FREE: 16 PAGES OF IMPORTANT TRAILER INFORMATION

If your trailer requirements necessitate special designs or construction, you will find this new Mercury catalog helpful. Illustrates and describes special Mercury trailer designs in capacities from 4000 lbs. to 60,000 lbs. Concisely presented for ready reference, it includes specifications, characteristics and use recommendations. Request your free copy of Bulletin A-999 today.

**THE MERCURY MANUFACTURING CO.**  
4020 S. Halsted St., Chicago 9, Illinois

TRACTORS — TRAILERS — LIFT TRUCKS

When inquiring check CP 2049 on handy form, pgs. 2-3



Handles up to 840 cu. ft. per hour  
at belt speeds up to 200 feet a minute.  
Equipped throughout with SealMaster  
Ball Bearings and Guide Rollers.

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**STEPHENS-ADAMSON**  
MFG. CO.

Telephone-Bin Level  
Controls Car Loaders  
Sano Speed Reducers  
11 RIDGEWAY AVE., AURORA, ILLINOIS

When inquiring check CP 2050 on handy form, pgs. 2-3

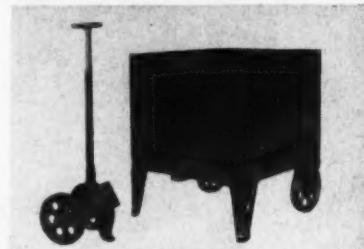
## MATERIAL HANDLING

### Dump or tier scrap bins with any fork truck . . .

mobile all-welded units also picked up with hand jimmy; available in range of sizes

**Uses:** For handling scrap and other materials. Rivets, for example, can be stored, transported and dumped with a minimum of effort. By application of stacking accessory, the truck can be stacked upon other identical trucks or upon other units of the maker's "to-the-ceiling" stacking system.

**Features:** Accommodates forks of standard lift trucks.



Mobile scrap bin and hand jimmy

With the truck forks engaged in the channels, the scrap truck can be turned to any desired angle, or completely upside down while dumping, yet remain entirely secure.

**Description:** Truck consists of a bin-like superstructure made of heavy steel plate panels, securely welded to a flat steel deck transport. Fabricated steel channels, built to accommodate the forks of standard fork lift trucks, extend from front to rear panels, just above the transport deck. Being of welded and riveted construction throughout, there is not a bolt, nut or screw to work loose. Cast steel or rubber-tired wheels (equipped with pressure lubrication fittings) and anti-friction bearings are the only moving parts.

A hand jimmy, at once, converts the stationary bin to an easily maneuverable hand truck. Thus the machine operator can position the load at his convenience, move it into the aisle for pickup or elsewhere, without waiting for a power truck. Fork or platform trucks, tractors or cranes move the unit for long hauls.

Sizes in which these trucks are available include units with steel sides of 20", 24", 28", 32" and 36" height above transport deck, with a corresponding capacity up to 22 cubic feet.

**Source:** Factory Service Co., Dept. CP, 4633 North 21st St., Milwaukee 9, Wis. . . . or check CP 2051 on handy form, pages 2 and 3.

### Bottles, cans move steadily despite length or speed of conveyor chain . . .

top plates have beveled edge; roller-chain construction absorbs shock loads

**Uses:** For conveying bottles, cans and small package goods.

**Features:** Provides smooth, steady travel for all types of bottled and packaged goods, regardless of length and speed of conveyor line. All-welded construction helps keep chains clean and sanitary.

**Description:** Roller-chain construction involves no hinge joints operating under tension, and contributes to absorption and cushioning of shock loads. Tapered headpins make chain assembly and disassembly easy and help eliminate spreading of side plates. Cotter keys are on one



### STANDARD IRONBOUND HANDLING UNITS FOR MANY JOBS

Ironbound "stock" units are built to meet many requirements. If a stock unit will not solve your problem, an Ironbound engineer is ready to solve it for you with a specially designed unit. Ask for General Catalog GP-7; Roll handling bulletin RT-8.

**IRONBOUND**  
BOX & LUMBER COMPANY  
Materials Handling Division  
65 HOFFMAN PLACE • HILLSIDE, N. J.

**Ironbound**

SKIDS • SEMI-LIVE SKIDS  
DOLLIES • FLOOR TRUCKS

When inquiring check CP 2052 on handy form, pgs. 2-3

**HAMMOND**  
**MULTI-WALL**  
SEWN • PASTED • OPEN MOUTH • VALVE STYLE  
**BAGS**



... are your best choice for  
packing and shipping all  
types of chemical products  
... under any conditions!

Write for your  
Free Copy of this  
Booklet



**HAMMOND BAG and PAPER CO.**  
GENERAL OFFICES: WELLSBURG, W. VA.  
Plants in Wellsburg, W. Va. and Pine Bluff, Ark.

When inquiring check CP 2053 on handy form, pgs. 2-3

CHEMICAL PROCESSING Preview



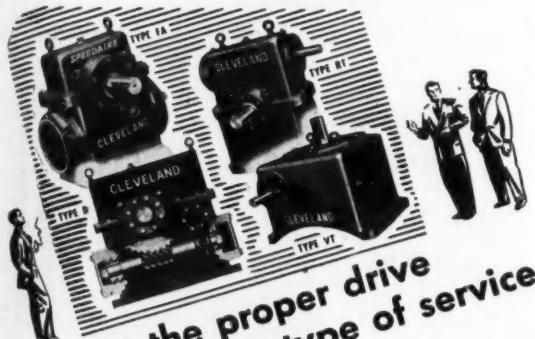
### STANDARD LITEWATE Sectional Roller Conveyor

—ideal for loading and unloading. Handles commodities up to 60 lbs.—moves bags, cases, cartons, hollow bottom, narrow, cleated and irregular packages or articles not suited to wheel conveyors. Less pitch required—operates at grades as little as  $\frac{1}{4}$  in. to  $\frac{3}{8}$  in. per ft. Interchangeable spacing of rollers—from  $\frac{1}{2}$  in. to 12 in. centers. Available in 10 ft. and 5 ft. straight sections and  $90^\circ$  and  $45^\circ$  curves. Keep LITEWATE conveyors handy in your shipping room—carry a section on your truck. For complete information write for Bulletin CP-79.

STANDARD  
CONVEYOR COMPANY  
North St. Paul 9,  
Minnesota



When inquiring check CP 2054 on handy form, pgs. 2-3



To select the proper drive  
for any type of service

GET your copies of the latest Cleveland catalogs for full information on all types and sizes of worm gear speed reducers—including rating tables, dimensional diagrams and data for both standard and fan-cooled units. Ask for Catalog 200 for standard drives and Catalog 300 for Speedaire (fan-cooled). The Cleveland Worm & Gear Co., 3257 E. 80th St., Cleveland 4, O.

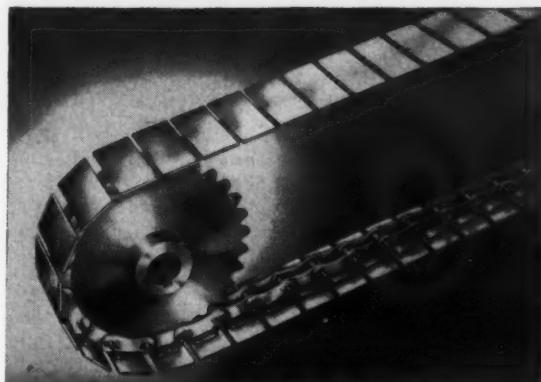
**CLEVELAND**  
Worm Gear  
Speed Reducers

For personalized  
service: Write  
or phone  
John E. Milliken  
Cleveland exch.  
Vulcan 3-4560

When inquiring check CP 2055 on handy form, pgs. 2-3

JULY, 1949

### MATERIAL HANDLING



All-welded platform conveyor chain

side of chain, which facilitates maintenance and makes installation easy.

Top plates have new-style beveled edge for safer transfer of materials.

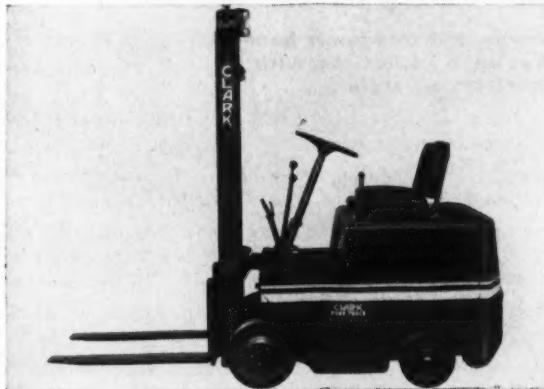
Source: Whitney Chain & Mfg. Co., Dept. CP, Hartford 2, Conn. . . . or for more information check CP 2056 on handy form, pages 2 and 3.

**Greater wheelbase gives gas  
fork truck better traction,  
grade climbing ability . . .**

redesigned 1-ton unit has new engine with 30% more brake hp, increased torque

Uses: For handling fork-truck loads up to 2000 lbs. Especially suitable where exceptionally good traction and ability to go up grades of 15 per cent is required.

Features: Widening of frame provides greater protection of wheels and gives more space for servicing, but overall width is only one inch more. Mechanical improvements include a new engine of 30 per cent higher brake horsepower and increased torque.



Gas 1-ton truck has 36-inch wheelbase

Description: Capacity is 2000 lbs. with load center at 24 inches from the heel of the forks. Wheelbase is 36 inches. With longer wheelbase, additional weight is put on drive wheels providing increased traction.

Floorboard is slanted for easier driving, and a leather-upholstered, air-inflated seat with back rest contributes to driver comfort.

Source: "Clipper 2024" truck is built by Clark Equipment Co., Dept. CP, Battle Creek, Mich. . . . or for more information check CP 2057 on handy form, pages 2 and 3.

## Pump APPLESAUCE OR ASPHALT!

● Yes, and even caulking compounds, glues and sealers. If you can pour it, you can pump it with Graco's remarkable new Powerflo Pumps. Large sash mills apply putty with Powerflo Pumps . . . food processors pump slow, sticky products like molasses, cake frosting, jelly, lard . . . even chewing gum.

This powerful air operated pump unit fits over standard 5-gallon pails in which these materials are packed and delivers a steady, uniform flow from the nozzle. It eliminates messy, wasteful handling, speeds production, cuts costs. If you use heavy, thick liquids, you'll be time and money ahead with a Graco Powerflo Pump. For complete details . . . write

Industrial Department  
**GRAY COMPANY, INC.**  
93 11th Avenue, N.E.  
Minneapolis 13, Minn.



**GRACO POWERFLO PUMP**

When inquiring check CP 2058 on handy form, pgs. 2-3

### ARROW QUALITY WOOD TANKS



Built from Tidewater Red Cypress, California Redwood, Douglas Fir and Long Leaf Yellow Pine to meet the exact needs of the Chemical Processing Industry.

Related products:  
Degasifiers, Suction  
Filters, Wood Stacks

and Conduits, Plates and Frames for Filter Presses.

Send us your inquiries and drawings. We can help you design a unit to meet your needs.

Write for a copy of "Wood Tank Engineering"—a complete twenty-six page manual for tank buyers and users.

**ARROW TANK CO., INC.**

8 Barnett St.

Buffalo 15, New York

Since 1861 — Three Generations of Tank Building Experience

When inquiring check CP 2059 on handy form, pgs. 2-3

**FOR YOUR SPECIAL MACHINERY**



**DIAMOND ROLLER CHAIN Simplifies Drive Problems**

You can simplify machinery design, assembly and operation by means of Diamond Roller Chain.

The transferring of power from motors, from shafts, from reducers is accomplished without slip. Definite speed ratios can be determined, shafts close together or far apart can be connected—and shaft rotations of any speed arranged for. DIAMOND CHAIN COMPANY, Inc., Dept. 411, 402 Kentucky Ave., Indianapolis 7, Indiana. Offices & Distributors in All Principal Cities.

Catalog 709 will give you the helpful data you need. Write for a copy.



When inquiring check CP 2060 on handy form, pgs. 2-3

**This THOMAS Truck made with many different STAKES, SHELVES, RACKS, BOXES, and HANDLES**



How Thomas men help you "Job-Suited" trucks for your particular purpose: (1) Chassis is selected first. Kind and weight of average load and floor conditions determine platform size and wheel gear. (2) The superstructure that will handle your loads most efficiently is then chosen. Thomas has over 1000 super (handles, boxes, shelves, etc.) cataloged for easy selection. Thomas "Job-Suited" trucks cost no more but you get more out of them because—they suit your job. Catalog and prices on request.

**THOMAS**

**"JOB-SUITED" TRUCK**

Series 3400 hardwood platform truck with round corners. Made in 10 sizes. Illustrated above with type A superstructure. Tubular steel push handle 40" above floor. Moulded-on rubber tired wheels, Hyatt bearings. Thomas makes many other types of 2 and 4 wheel trucks, casters and wheels. Write for catalog. Representatives in principal cities.

**THOMAS TRUCK AND CASTER CO.**

57 Mississippi River

Keokuk, Iowa

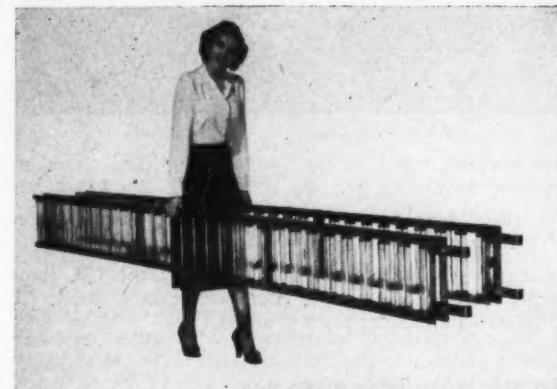
When inquiring check CP 2061 on handy form, pgs. 2-3

**MATERIAL HANDLING**

**Conveyor's exceptional light weight is due to magnesium frame, plastic rollers . . .**

each section weighs 32 lbs., has capacity load of 500 lbs. per 10 ft. length

**Uses:** Especially useful for handling boxes and cartons that are of somewhat light or flimsy construction, and may become soft from repeated handling. Also for other light unit loads that are suitable for handling on portable conveyors.



Magnesium or aluminum frames make conveyor sections portable without sacrifice in strength

**Features:** Plastic rollers extend under the full width of cartons. The 2-inch diameter rollers are set on 4-inch centers. Conveyor has a 10-inch carrying surface.

**Description:** Conveyors are furnished with aluminum or magnesium frames. Frames and plastic rollers are corrosion-resistant. Couplings are hook-on type. In addition to their in-plant use, these portable conveyors are easily carried on trucks for loading and unloading service.

**Source:** Alvey Conveyor Mfg. Co., Dept. CP, 3201 S. Broadway, St. Louis, Mo. . . . or for more information check CP 2062 on handy form, pages 2 and 3.

**Move, raise and lower heavy dies up to 16,000 lbs. with roller top die truck . . .**

unit has auto-type steering; 4 hydraulic hoists operate against toggle levers

**Uses:** For handling large dies in operations where the maximum load is up to 16,000 pounds.

**Features:** Roller top can be removed so that dies may be supported on flat steel top, providing three inches less height in lowered or elevated position.

**Auto type steering.** Tow handle is provided for manual use and also a towing bar for use with industrial tractor.

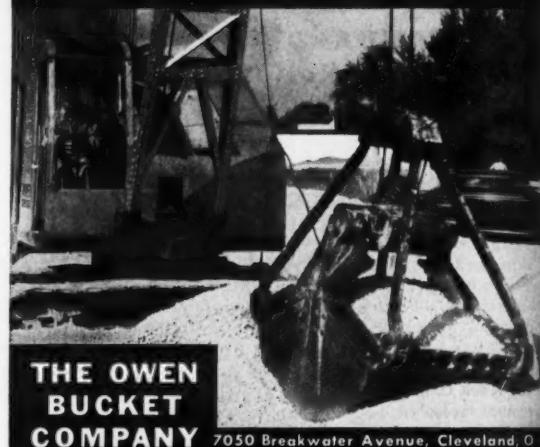
**Description:** Truck is furnished with a platform 48 inches wide by 57 inches long. Roller top consists of 5 rows of rollers placed on four inch centers. Elevation is made possible by the arrangement of 4 hydraulic hoists operating against toggle levers. A two-speed hand pump operates the hoists and a finger tip release lever controls the lowering speed.

The hand winch, used to draw dies on the table, is geared to a 96 to 1 ratio and is supplied with 25 feet of steel cable. When positioned in front of a press the truck can be firmly secured by a screw type lock that engages the floor. Large 10-inch wheels roll easily on ball bearings.

Each truck is built to meet customer's special requirements.

**Handlers of BULK CHEMICALS RELY ON OWEN BUCKETS**

They know that consistent capacity grabs with rapid, complete discharge is assured. Write for literature describing the COMPLETE LINE of Owen Buckets.



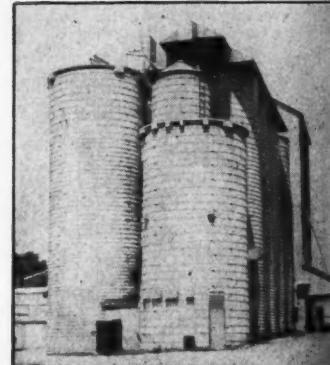
**THE OWEN BUCKET COMPANY**

7050 Breakwater Avenue, Cleveland, Ohio

Branches: New York Philadelphia Chicago Berkeley, Calif.

When inquiring check CP 2063 on handy form, pgs. 2-3

**FAST IN TWO SENSES**



Because the Super-Concrete Staves lay up readily, Neff & Fry Storage Bins are erected fast; i.e., in a comparatively short time.

The staves interlock together firmly. The tiers are securely bound with heavy galvanized steel rings. The materials are enduring. So Neff & Fry Bins stand fast; i.e., ruggedly, for a long time.

Experience over a period of almost 30 years proves that Neff & Fry Super-Concrete Stave Storage Bins serve from one generation to the next with virtually no upkeep cost. Many of the leading manufacturing, processing, mining, quarrying, distributing, and transportation companies of the country will testify that this is true.

We'll gladly give you the evidence. Get it before you contract for storage bins. Write, wire, or phone us.

**NEFF & FRY STORAGE BINS**

FOR ALL SORTS OF BULK FLOWABLE MATERIALS

**THE NEFF & FRY CO., Camden, Ohio**

When inquiring check CP 2064 on handy form, pgs. 2-3

CHEMICAL PROCESSING Preview

# Perfectly Formed HELICOID

SCREW CONVEYOR

It's "HAMMOND"

The Ultimate in  
DESIGN • CONSTRUCTION  
and PERFORMANCE

Experienced eyes can see the difference in the smooth, tapered flight surface, in the streamlined forged steel supporting lugs and in the break-proof welded "flight-to-pipe" mounting of the "HAMMOND" Helicoid Conveyor. Rigidity in construction insures positive concentricity, providing the highest possible smooth, vibrationless operation. Wear producing buckling and whipping that causes breaks in fittings, bearings and boxes are eliminated.



Our engineering has answered the demand for needed improvements in conveyor production and that is why "HAMMOND" Helicoid best withstands the fatiguing strains of daily usage.

#### Complete Service

We are specialists in the manufacture of Elevator Buckets, Elevator Bucket Accessories, Screw Conveyor and Screw Conveyor Accessories. Investigate our latest developments for vertical, horizontal or inclined conveying. "Screw-Lift", "Screw-Veyor" and "Screw-Flo".

**Screw Conveyor Corporation**  
701 HOFFMAN ST. HAMMOND, IND.  
MANUFACTURERS  
TRADE MARK REG. U.S. PAT. OFFICE

When inquiring check CP 2065 on handy form, pgs. 2-3

Need stainless or heat-resistant sheets?

REMEMBER

**INGERSOLL**  
ROLLS ALL THREE!

STEELS that  
RESIST CORROSION

STEELS that  
RESIST HEAT

STEELS for LOWER  
COST STAINLESS  
PROTECTION

**BW**  
BORG-WARNER

Countless applications in all of the Process Industries have proved the dependability and real economy of Ing-Aclad Stainless-Clad Steel.

Where protection is needed on both sides of the metal, Ingersoll solid stainless sheets have wide acceptance.

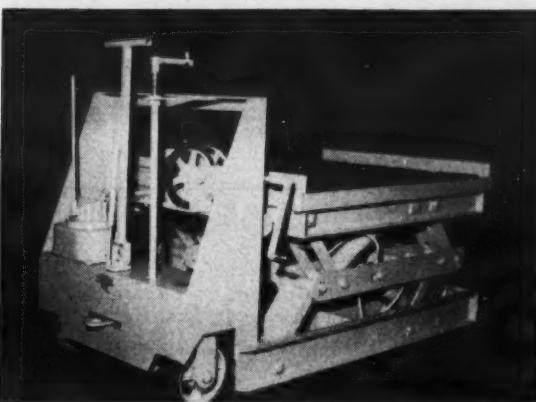
Ingersoll heat-resistant steels have made an outstanding record in such applications as furnaces, ovens, etc., where excessively high temperatures are applied.

**INGERSOLL** STEEL DIVISION, Borg-Warner Corporation  
Plant: Chicago, Illinois; New Castle, Indiana; Kalamazoo, Michigan

When inquiring check CP 2066 on handy form, pgs. 2-3

JULY, 1949

## MATERIAL HANDLING



Die truck — 16,000 lb. capacity — has roller top

Thus, this type of equipment is available in a wide range of top sizes and capacities.

Source: Lyon-Raymond Corp., Dept. CP, 2275 Madison St., Greene, N. Y. . . or for more information check CP 2067 on handy form, pages 2 and 3.

#### Move brick, bales and boxes without pallets when truck uses special forks . . .

three types meet range of requirements; all grip load positively until load weight is relieved

Uses: For palletless handling of bricks, barrels, boxes and bags.

Features: Forks apply positive grip to load until load weight is released. Permits trucks to speed movement of materials; save labor.

Description: Three different styles of forks are available for hydraulic operation on all models of maker's gasoline-driven fork-lift trucks. The first comprises two forks for holding sides of barrel, or other unit load; second is



Rubber-padded forks grip brick securely

made up of four rubber padded forks for gripping the bottom tiers of bricks (illustrated), and the third comprises four semi-curved forks for lifting two rows of bags.

Source: Trucks and special forks are built by Buda Co., Dept. CP, Harvey, Ill. . . or for more information, check CP 2068 on handy form, pages 2 and 3.

PROTECT PUMPS AND SCREWS!  
AVOID DOWNTIME!  
ELIMINATE COMPLAINTS  
AND LAWSUITS!



#### STOP TRAMP IRON with the Powerful Dings MAGNA-TRAP

THE new Dings Permanent Alnico Magnetic MAGNA-TRAP fits right into your liquid lines to stop stray iron in its tracks! No restriction to flow. Highest grade extra large, heavy duty Alnico casting—poles covered by stainless plate. Choice of polished bodies of No. 316 stainless, Waukesha metal or SAE 40 bronze. Sanitary IAMD threads. White neoprene dairy stock gasket. This magnetic trap meets all sanitary requirements, is easily cleaned simply by removing wing nuts. Available to fit 1" through 4" lines. *Magnetic permanence is guaranteed for the mechanical life of the installation!* The sooner you install MAGNA-TRAPS, the sooner you save money. WRITE FOR BULLETIN AND PRICES.

**DINGS MAGNETIC SEPARATOR CO.**

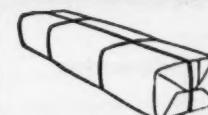
4731 W. Electric Ave.  
Milwaukee 14, Wis.

**Dings**  
HIGH INTENSITY

When inquiring check CP 2069 on handy form, pgs. 2-3

#### SHIP IT BETTER, FASTER, SAFER for LESS with SIGNODE STEEL STRAPPING

##### For PACKAGES



##### ...CONTAINERS



##### ...BUNDLES



Products that go to market protected with Signode steel strapping are products that travel at less cost, arrive in better condition, return bigger profits.

The use of Signode steel strapping and scientifically designed strapping tools also puts your packaging and shipping methods on a production line basis, increases man-hour output, saves time and materials, and gives you maximum protection against pilferage.

A trial order will convince you . . . or write for more detailed information and a copy of Signode's new "Answer Book" that shows how others are benefiting.

**SIGNODE**

**SIGNODE STEEL STRAPPING COMPANY**  
2658 NORTH WESTERN AVENUE • CHICAGO 41, ILLINOIS

When inquiring check CP 2070 on handy form, pgs. 2-3



Complete

## Jacketed Pipe and Fluidometer Systems

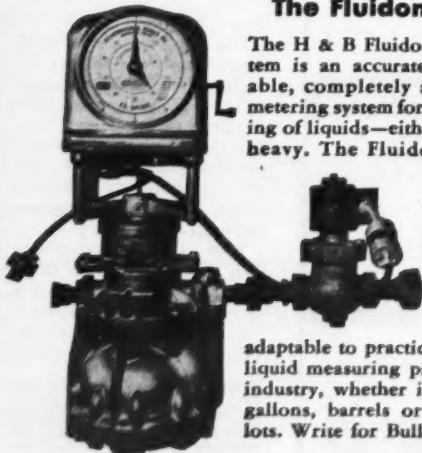
### For All Liquid Handling Problems

H & B Jacketed Pipe Systems are engineered and manufactured to meet every requirement of dependable and economical processing in operations where the maintenance of uniform temperature in the process pipes is highly essential. Regardless of whether the product being handled requires a hot or cold temperature, or what heating or cooling medium is used, H & B Jacketed Pipe and Fittings help assure efficient production. Write for Bulletin S-47.



### The Fluidometer

The H & B Fluidometer System is an accurate, dependable, completely automatic metering system for the batching of liquids—either light or heavy. The Fluidometer is



adaptable to practically every liquid measuring problem in industry, whether it involves gallons, barrels or tank car lots. Write for Bulletin F-46.

### HETHERINGTON & BERNER INC

711 Kentucky Avenue, Indianapolis 7, Indiana

When inquiring check CP 2071 on handy form, pgs. 2-3

## Briefs . . . from contemporary publications

Here's a quick look at interesting articles appearing in other publications,  
... as selected by Technical Editor, H. McCormack

### Chemical plant location

Six papers evaluate various factors to be considered in preliminary investigations to decide the location of a chemical processing plant.

Papers in symposium cover methods of determining plant location; relation of water supply to location; factors in heavy chemicals plants; factors in agricultural process industries; factors in the plastics industry; economics of petroleum chemical plant location.

Each paper gives considerable detail. ("Chemical Engineering Progress", May 1949, page 283)

### Extraction naphthas: physical and chemical properties

An extended study of chemical and physical characteristics of 6 hexane-type commercial naphthas is subject of 3-page article.

Results are given in 4 tables. Attention is called to presence of certain components, in some samples, which lower their value in customary extractions. Range in boiling point is not sufficient specification when purchasing a naphtha solvent.

Includes 4 tables and bibliography. ("Journal of American Oil Chemists Society", April, 1949, page 76)

### Uses, design of water-lubricated soft rubber bearings

Types of service in which this kind of bearing has given most satisfactory service are stated.

Various factors to be considered in designing a satisfactory bearing are discussed. Indicates speed limits for operating, proper shaft materials, and circulation of lubricant. 7 pages, 12 figures. ("Rubber Age", May, 1949, page 173)

### Destructively measure thickness of process-equipment walls

Frequently it is desirable to measure wall-thickness of chemical processing equipment which has been in operation for some time.

Methods are described which may be used for this purpose without cutting the wall. Wall thicknesses are specified for each instrument. Accuracy of measurement is stated, also types of metals and method of measurement. 3 pages, 6 figures, 1 table. ("Chemical Industries", April 1949, page 578)

### Selecting piping systems by economic analysis

Value of economic analysis when planning installation of a piping system is cited. Suggested analysis compares: (1) piping shut-down costs in terms of plant output to

piping investment, (2) comparison of power costs to extra piping investment.

Four alternate piping systems are presented and discussed.

Information is tabulated to show: (1) shutdown losses for process units; (2) savings resulting from various piping arrangements; (3) Process-piping system head-losses, material and operating costs; (4) head-capacity and horse power, clean vs corroded pipe. 3 pages, 4 figures, 3 tables. ("Industry and Power", May 1949, page 79)

### Partial enthalpies of light hydrocarbons

Seven enthalpy charts of various light hydrocarbons are presented in 7-page article. Suggests their use as an aid to designers of hydrocarbon fractionating towers.

Form of enthalpy charts is discussed. Indicates how intermediate points may be calculated. Compares this with other methods. Sample calculation is included. Illustrated with 7 charts, 1 problem. ("Petroleum Refiner", May 1949, page 109)

### Decimal classification system avoids cross-indexing

Chemical engineers who find it difficult to maintain readily-accessible files of reference-literature will find this 8-page article useful. Merits and limitations of the decimal system of classification are discussed.

Method is said to avoid cross-indexing. Development of the system is discussed. Three tables. ("Petroleum Refiner", May, 1949, page 140)

### pH-response of glass electrodes

Study was made to determine rate of response of glass electrodes, of several different compositions of glass, to a changing pH.

Rate of response was determined in buffer solutions, and results tabulated. Same was done for electrodes exposed to solutions of varying pH, then water-washed.

Influence of abnormal drying was studied and results tabulated. Comments are made as to proper care and use of glass electrodes. 3 1/2 pages, 5 tables, 2 figures. ("Analytical Chemistry", May 1949, page 559)

### Molded nylon

Variations in physical and chemical properties of molded nylons, as composition and processing is changed, result in a material having many diverse applications. Chief among these, to date, is its use as machine parts, according to a 7-page article.

Properties of one of the latest nylons, designated as FM-10001, are stated as to unmolding and brittleness temper-

tures, toughness, chemical resistance and moldability into thin sections.

Applications are cited, such as bearings and gears, varied electrical uses, and as valve seats. Specific properties making the material suitable for various uses are stated and commented on. 9 photos. ("Modern Plastics", June 1948, page 57)

#### **Chemical operations expedited by statistical control: a case study**

Possibilities of using mathematical interpretation of data by standard statistical methods as an aid in improving product quality and reducing costs are discussed in 5-page article.

Certain processing operations conducted by the Staley Company are used to illustrate application of the method.

Means of establishing control limits are stated and discussed. Control charts for 2 months illustrate results attained. 5 pages, 5 charts. ("Chemical Industries", April, 1949, page 568)

#### **Statistical methods interpret, evaluate analytical data**

Three-page forensic discussion concerns possibility of using current statistical methods to improve chemical processing, particularly to interpret and evaluate analytical data. ("Chemical and Engineering News", May 16, 1949, page 1426)

#### **Refine, fractionate soyabean oil with fufural**

Process of liquid-liquid fractionation which, when applied to degummed soyabean oil, yields a food-oil fraction, a paint-oil fraction, and a small amount of by-product, is described in 4½-page article.

Necessary equipment is specified, requisite oil-solvent ratios are stated, and products obtained are identified by tabulating their analyses.

Paint-oil fraction is subjected to various tests to confirm its usefulness for this purpose. Properties of solvent-refined and alkali-refined oils are tabulated for comparison. 14 tables, 1 figure. ("Journal of American Oil Chemists Society", April, 1949, page 162)

#### **Control of heat pumps**

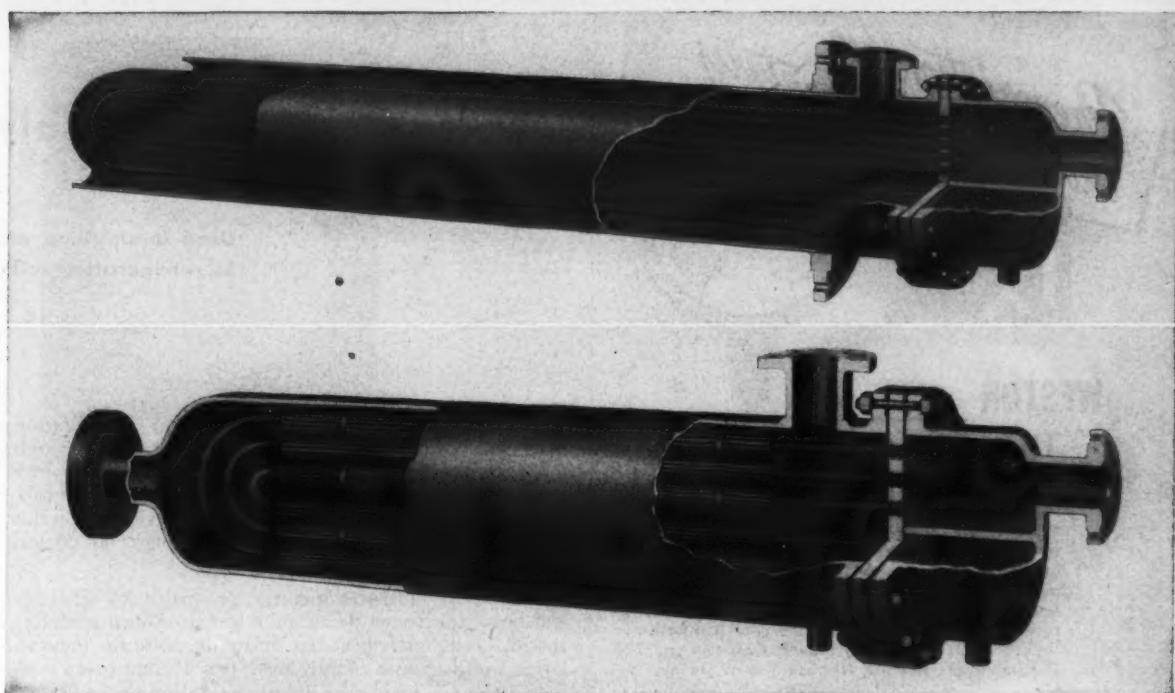
Complexity of control problems connected with operation of heat pump is presented in 5-page article.

Attention is called to the lack of information concerning operation of heat pumps, except in specific installations. Stresses necessity of securing more general data for design purposes. Air-to-air heat pump, made in package-form by General Electric Co. and designed to supply more fundamental data, is commented on. 4 figures. ("Refrigerating Engineering", May 1949, page 435)

#### **Stability of concentrated $H_2O_2$ solutions**

Author reports results of study of stability of hydrogen peroxide solutions exposed to various temperatures and containing various ions added as catalysts to accelerate decomposition. ("Industrial and Engineering Chemistry", May, 1949, page 992)

JULY, 1949



## **BROWN FINTUBE**

### **Tank Suction Heaters and Line Heaters**

● Brown Fintube Tank Suction Heaters are moderately priced and highly efficient. They heat viscous oils so that they can be pumped more easily, and bolt or weld to a tank nozzle, or directly to the tank shell, so all piping and connections are made outside the tank.

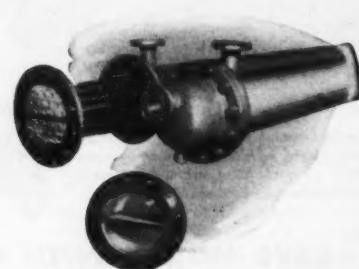
The Line Heaters are used as Suction Heaters to permit easier pumping of viscous oils; — or as Pressure Heaters, either to overcome temperature losses in long lines, or to preheat liquids for further processing.

In all cases the bundles consist of Brown Fintube hairpins rolled into the tube sheet in full compliance with the ASME codes. Metal bands, placed around alternate fintubes, prevent the longitudinal fins from interlocking and restricting the flow. This construction avoids baffling, and permits the liquids being heated to pass through the bundle *unobstructed*, in close contact with the fins and center tubes, with *low pressure drop*. Wide range of standard sizes.

**Send for Bulletin No. 482. It gives full details.  
Let us quote on your requirements.**



**Brown Fintube Hairpin Bundles Showing the Banding of Alternate Tubes that Eliminates Baffles and Assures Unobstructed Flow.**



**Hairpin Bundle Assembled in Shell Showing Mounting of Tube Sheet Between the Shell and Head.**

**THE BROWN FINTUBE CO.  
ELYRIA, OHIO**

**FINTUBE  
HEAT TRANSFER  
PRODUCTS**

When inquiring check CP 2072 on handy form, pgs. 2-3

Prescription for  
industrial temperatures

**R**  
EADABLE  
ELIABLE  
UGGED



## WESTON All-Metal Thermometers

Rugged, all-metal construction . . . stainless steel stems . . . bold, readable dials . . . accuracy within 1% over the entire scale—all add up to the answer to industry's toughest temperature measurement requirements. Choose a dependable WESTON thermometer from a variety of types, stem lengths and scale ranges. Call your jobber, your WESTON representative, or write for Thermometer Bulletin . . . WESTON Electrical Instrument Corporation, 706 Frelinghuysen Avenue, Newark 5, New Jersey.

**WESTON** Instruments

When inquiring check CP 2073 on handy form, pgs. 2-3



Straight reading (non-reset or set-back type) or two hand, vertical dial type set-back registers optional. Automatic shut-off valves and temperature compensators available.

### SAVE MONEY WITH METERS when Batching, Blending, Processing, Handling Liquids

When you use Empire meters for quantity control you get exact measurement—quick. No more stick gauging or waiting for batch tanks to fill. You stop spillage, too. And with a closed piping system you can forget about contamination, evaporation losses and fire hazards. With Empire meters you will cut production costs, increase output. Made to handle a wide variety of liquids. Get facts now.

**Pittsburgh Equitable Meter Division**  
ROCKWELL MANUFACTURING COMPANY  
410 N. Lexington Ave., Pittsburgh 8, Pa.

**Empire METERS**

When inquiring check CP 2074 on handy form, pgs. 2-3

## Electronic Method Analyzes Vibration and Noise

Used in checking machinery, fluid flow, gas expansion in refrigeration coils, air and water leaks, etc.

**USES:** Checking gas expansion in refrigeration coils, and tracing gas or liquid movement through piping systems. Detection of water and air leaks—since range of instrument extends into super-sonic levels, meter readings indicate otherwise imperceptible leaks. Another use is periodic maintenance checks at critical points on machinery.

**Features:** Measures quantity or quality of vibration and noise, unaffected by airborne sounds. When analyzing specific noise, instrument can isolate the noise for interpretation and diagnosis. Easily set to permit comparison readings against a standard. In production work, acceptance or rejection can be determined on a "go-no-go" basis, depending upon how much a piece deviates from accepted standard. Simple and accurate.

**Description:** Consists of contact pick-up which "feels" vibration through metal probe, an electronic amplifier, meter and earphones. The pick-up is wired to the amplifier whose function is to amplify the vibrations sensed by probe to a volume which permits ready isolation, definite measurement and accurate diagnosis.

Meter is for visual, quantitative analysis. It can be graduated in decibels or in other ways for particular applications. Earphones are for qualitative analysis and diagnosis of vibration, or for establishing proper criteria for particular applications. They have sponge rubber cups to shut out interference from airborne sounds.

When making quantitative check, probe is applied to "standard" vibration, and volume control is adjusted until meter reads zero. Without touching volume control, comparison readings can then be taken on other noise sources, deviation from "standard" being noted.

In qualitative testing, operator must have some knowledge of the particular sound he wishes to analyze. Using the earphones, he identifies such noise, isolates it and interprets it.

Both a portable Sono-Probe and a bench model (Sono-Probe Senior) are available. The first is self-contained,

weighs 6-1/2 lbs and operates from standard A and B batteries. Has built-in battery check; volume control on amplifiers alone. Amplifier gain is approximately 70 db, amplifier frequency response is plus-or-minus 2 db from 100 to 15,000 cycles, probe frequency response is 100 to 20,000 cycles.

Bench model operates on 115-volt, 60-cycle AC. It has greater accuracy and better frequency response than portable unit. Has electronic voltage regulator, power-line



Taking periodic maintenance check on pre-determined critical point. This shows the portable instrument in use.

filter and oscilloscope leads. Volume control on amplifier; separate control on earphones. Amplifier gain is about 90 db, amplifier frequency response plus-or-minus 2 db from 100 to 20,000 cycles, probe frequency response 100 to 20,000 cycles.

**Source:** Made by Aircraft Electronics Associates, Inc., Dept. CP, 1031 New Britain Ave., Hartford 10, Conn. . . . or for more information check CP 2075 on handy form, pages 2 and 3.

### Reads solution-concentration within 0.1% . . .

photoelectric colorimeter is simple to operate; makes routine analyses in matter of minutes

**Uses:** Determining concentration of solutions.

**Features:** Reads accurately to within 0.1%. Close control during production of instruments permits different workers to obtain identical readings on same specimen, even on different instruments. All adjustments made with single control, and no special skill required in operating.

Once calibrations have been set up, any competent worker can make routine analyses in minutes.

**Description:** Photoelectric colorimeter is called the Rouy Photometer. High accuracy is made possible by careful matching of the photoelectric cell and the direct-reading microammeter. Measured electrical energy is strictly linear to transmitted light energy.

Ten narrow-band (40 millimicrons) glass filters give fine definition over entire visible spectrum. Each filter and filter element is controlled in production and matched to produce identical spectral transmission curves. Use of pre-

cision square absorption cell eliminates possible errors of ordinary curved cells.

Compact, light-weight instrument operates from 115-volt AC line. Where only DC is available, terminals are provided for connection to 6-volt storage battery.

Source: Made by E. Leitz, Inc., Dept. CP, 304 Hudson St., New York 13, N. Y. . . . or for more information check CP 2076 on handy form, pages 2 and 3.

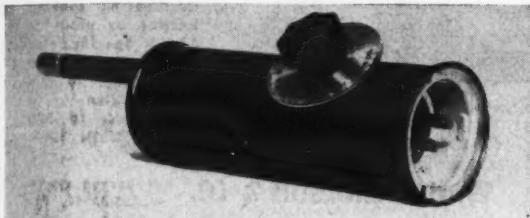
#### Pulsed-leak principle controls vacuum . . .

"adjustable leak" does not plug, is for use with any gas; employed alone or with relay monitor

Uses: Controls vacuum.

Features: Continuously adjustable from completely closed to completely open position. Cannot plug with dust or moisture and may be used with any gas.

Description: "Adjustable leak" is based upon the Bachman pulsed-leak principle. Can be used alone to give desired vacuum by balancing leak rate against pump rate,



Controls vacuum by pulsed leak principle

or may be used with vacuum relay monitor to maintain desired vacuum regardless of varying conditions within vacuum system.

Compact, rugged unit is  $6\frac{1}{2} \times 2$ " OD and has 4" exhaust tube. Weighs 1 lb and is furnished with 5' of cable. Operates on 110 volts AC.

Source: Development of Skaneateles Mfg. Co., Inc., Dept. CP, 122 Dickerson St., Syracuse 2, N. Y. . . . or for more information check CP 2077 on handy form, pages 2 and 3.

#### Test electronic controls with sensitive oscillograph . . .

unit has vertical response to 1 megacycle, horizontal response to 500 kilocycles

Uses: To test high frequency electronic instruments and controls.

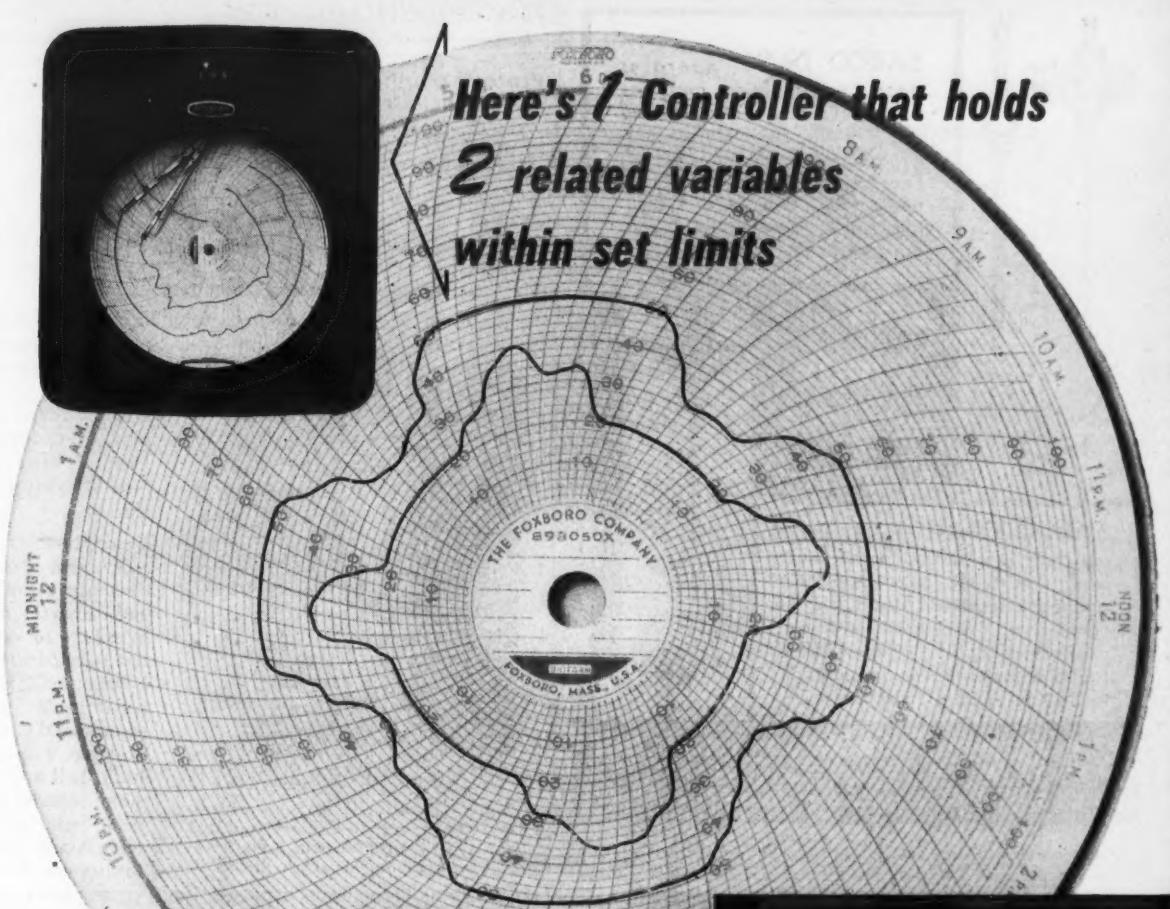
Features: Built-in phasing control, 3-position synchronization selection. Audio monitoring phone jacks. Direct access to deflection plates.

Description: Vertical amplifier response to 1 MC, with 2 M input resistance, 20 mmfd. input capacity. Twenty-millivolt vertical sensitivity permits direct examination and alignment of low gain circuits and weak signals. Vertical input attenuator is calibrated, cuts response by factor of 10 or factor of 100.

Horizontal amplifier response to 500 KC, with 500 K input resistance, 20 mmfd input capacity. Internal sweep range is from 10 cycles to 30 KC, timed by compensated multivibrator. "Z" axis inputs permit blanking, timing, etc.

Source: Produced by Precision Apparatus Co., Inc., Dept. CP, 92-27 Horace Harding Blvd., Elmhurst, L. I., N. Y. . . . or for more information check CP 2078 on handy form, pages 2 and 3.

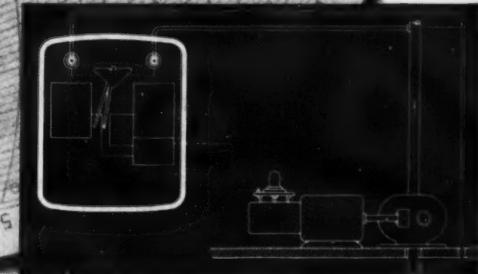
JULY, 1949



## The NEW FOXBORO M-40 AUTO-SELECTOR

This Unique Controller operates from two related measurements, automatically transferring control from one to another as required to prevent either one from exceeding its set limit. As in the case diagramed at right, when supply is greater than demand, control is maintained on the demand side (discharge) . . . but when demand exceeds supply control is maintained on the supply side (suction).

The M-40 Auto-Selector has two measuring elements and control mechanisms — also a combined air relay. It actually does the work of two instruments . . . with one or the other variable under control at all times. The transfer of control from one variable to the other is smooth, instantaneous, and with no upset. Any type of control action may be used. Any combination of related variables may be controlled — pressure and flow; temperature and level; two flows; two pressures; etc.



**DIAGRAM** with accompanying chart above illustrates one of many applications. Pump drive is controlled to keep suction pressure from dropping below a set minimum, and discharge pressure from exceeding a set maximum. The instrument automatically controls from either variable as changing conditions require. On the chart, the outer record is for discharge pressure, the inner, for suction pressure.

Write for details. The Foxboro Company, 190 Neponset Ave., Foxboro, Mass., U. S. A.

# FOXBORO

RECORDING · CONTROLLING · INDICATING  
INSTRUMENTS

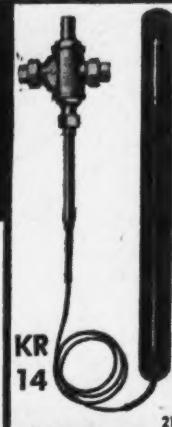
When inquiring check CP 2079 on handy form, pgs. 2-3



TR-21

**SARCO TR-21** operates steam, water, brine and gas valves. Entirely self-contained and self-operated. No electricity, compressed air, etc., needed. Easy to install. For any temperature between 0 and 300° F. Electric controls also available. Catalog 600.

### SARCO Temp- erature Control



KR  
14

**SARCO KR-14** temperature regulator is a self-operated liquid expansion type control, packless and easy to install. Used for air conditioning, refrigeration, dryers, ovens, ducts and all types of industrial process work. Temperatures 0° to 300° F. 1/2 to 8". Catalog 600.

**SARCO** SARCO COMPANY, INC.  
Empire State Bldg., New York 1, N.Y.  
SAVES STEAM SARCO CANADA, LTD., TORONTO 5, ONTARIO

When inquiring check CP 2080 on handy form, pgs. 2-3



Step Up Production  
Reduce Waste and Loss

BY MAINTAINING  
Exact liquid levels in  
containers.

THUS  
PREVENTING

Overflow or draining of  
tanks or boilers: Air  
binding process pumps:  
Burning out boiler tubes  
or Processing pots: Water  
contamination, etc.

### Fartron Electronic Liquid Level Controls

Sanitary — Dependable — Accurate  
Just two polished stainless steel rods  
in the vat, tank, boiler, processing  
kettle, freezer, pasteurizer etc., to  
control signals or operate valves at any  
pre-set level. Constantly on duty—  
need no servicing—and are easy to  
install.

If you have any liquids—hot or cold—with  
or without foam—in any type of container  
to control, you should have our Bulletin 481.  
Write for it today.

**Lumenite Electronic Company**

407 S. Dearborn Street Chicago 5, Ill.

When inquiring check CP 2081 on handy form, pgs. 2-3

### PROCESS INSTRUMENTATION

#### Protects plant from hazards of combustible gas . . .

detector and safety controller receives full approval of Underwriters', Factory Mutual

Uses: Detects and warns of build-up of combustible gases in plant atmosphere. As it gives danger signal, system automatically takes over control of plant's operating machinery, fire-fighting system and/or ventilation, depending upon particular protection requirements of plant.

Features: Reported to be first device of its type to fully pass requirements of Underwriters' Laboratories. It is also approved by Associated Factory Mutual Fire Insurance Co.

Description: Instrument continuously samples and analyzes atmosphere in various selected areas in plant. When combustible gas accumulation approaches a preset limit, bell and/or siren sounds and neon light comes on. Alarm point setting can be set

from 20-100% of lower explosive limit for any given gas. Wide-faced meter indicates gas concentrations at any given time.

Indicating and control mechanism is contained in air-tight and dust-proof cabinet mounted on self-supporting steel panel. Gas analysis cells, or "remote heads", are located at danger points throughout plant, and are connected by tubing to heavy-duty, rotary vane, forced-feed-lubricated vacuum pump mounted on control panel. These heads are designed to be placed at any distance from control panel, analysis taking place in danger area and instantly "telegraphed" to the panel.

In addition to automatic gas warning signals, instrument has separate fool-proof signalling system to indicate both visibly and audibly any failure of instrument. This assures full-time safe operation. Operates on 110 volts, 60 cycles, and is provided with 3-wire grounded neutral protective system.

Source: Lor-Ann combustible gas detector and safety controller is a development of Lor-Ann Instrument Co., Inc., Dept. CP, 58 Montgomery St., Jersey City, N. J. . . . or for more information check CP 2082 on handy form, pages 2 and 3.

#### "Packaged laboratories" for radioactivity counting or research . . .

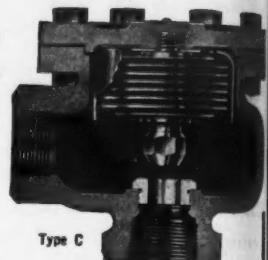
integrated groups of instruments facilitate precise analysis, monitoring, counting, etc.

Uses: Two groups of instruments contain all equipment necessary for laboratory work; one group is designed for routine counting, detection, monitoring, etc., while other group permits complete radioisotope analysis, includ-

### Nicholson Steam Traps

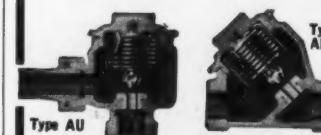
# STOP Waterlog Loss

#### Due to Operation on Lowest Temperature Differential



Type C

Repeated comparative tests by large trap users show that Nicholson traps operate on lowest temperature differential: 5° to 15°, depending on trap size and pressure. Thus prevent back-up of condensate and keep equipment full of live steam. Universally recommended for eliminating "cold blow" in unit heaters. Installations have increased production of cooking kettles as much as 30%. Specified for preventing corrosion or damage to thin gauges. Size 1/4" to 2"; press. to 225 lbs. BULLETIN 1047.



5 TYPES for every application

**W. H. NICHOLSON & CO.** 181 OREGON STREET  
WILKES-BARRE, PA.  
Valves • Traps • Steam Specialties

When inquiring check CP 2083 on handy form, pgs. 2-3

# RUGGED

### PRINCO SEVERE SERVICE THERMOMETERS

Here are the PRINCO Thermometers for those really TOUGH service conditions. Cases are extra heavy castings, specially designed for maximum strength. Frames and cases are BOLTED together. Glasses are extra heavy plate to withstand shock and vibration. Cases completely sealed against fumes and moisture. Built-in dehydrator prevents fogging or condensation. Extra protection for mercury tubes assures maximum service life.

Available in all standard case angles and temperature ranges, or to your specification. RED READING MERCURY or Conary-backed tubing optional. Wide selection of "Princo" Separable Sockets in a variety of materials. Ask for Bulletin "E".

### PRECISION THERMOMETER & INSTRUMENT COMPANY

PRECISION INSTRUMENTS  
PRINCO INDUSTRY  
1404 Brandywine Street, Philadelphia 30, Pa.

In Canada: PEACOCK BROS., LTD.

When inquiring check CP 2084 on handy form, pgs. 2-3

## PROCESS INSTRUMENTATION

ing discrimination between alpha, gamma, and beta radiation, precise counting of soft radiation, etc.

Description: Model L-165 is suggested grouping of instruments for routine laboratory work, including precise counting, sensitive detection, etc. Includes complete scal-



"Packaged laboratory" analyzes radioisotopes

ing unit, thin mica end window detector tube, tube mount, sample dishes, and cables. Timer, designed to operate with other instruments, is included if required.

Model L-163 is other complete group, especially planned for analysis of radioactivity. Pictured above, it consists of scaler, "Q-Gas" counter, and all necessary accessories. Counter can be used either as Geiger counter or in limited proportional region to discriminate between alpha, beta, and gamma radiation.

Counter has provision for predetermined count operation. If desired, timer is included with group, which makes possible predetermined time operation.

Source: Produced by Nuclear Instrument & Chemical Corp., Dept. CP, 223 W. Erie St., Chicago 10, Ill. . . . or for more information check CP 2085 on handy form, pages 2 and 3.

### Controls electric valves, motors in hazardous spots . . .

sealed timer is suitable for Class I Group D and Class II Group G locations; accuracy high

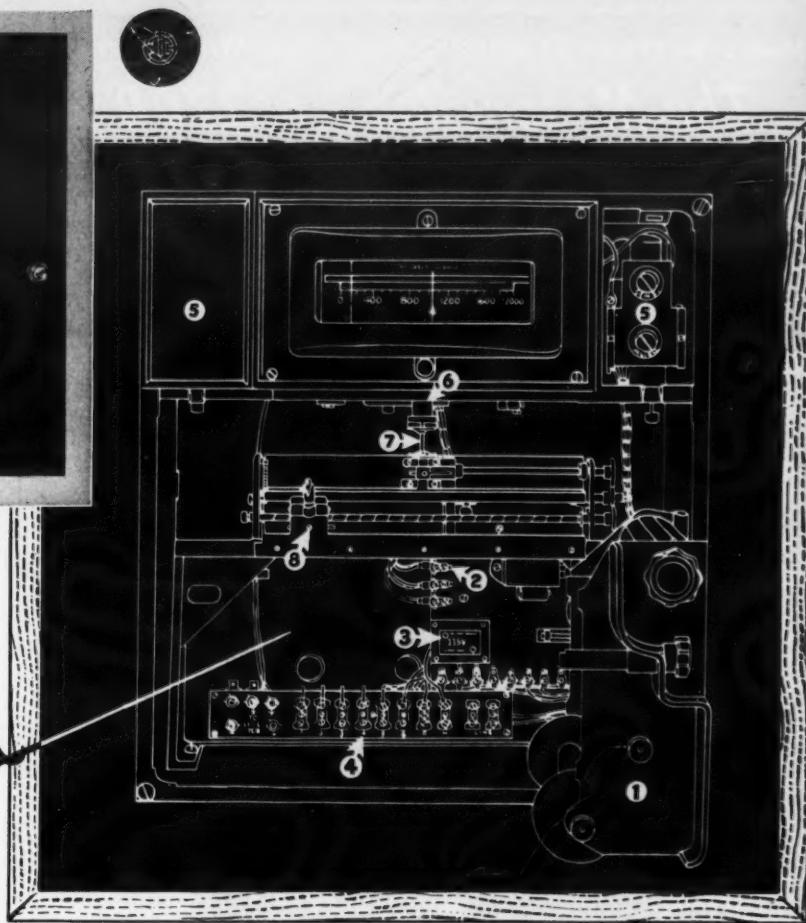
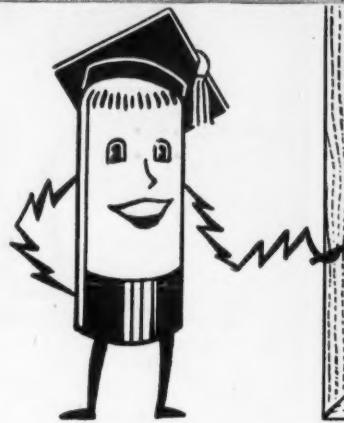
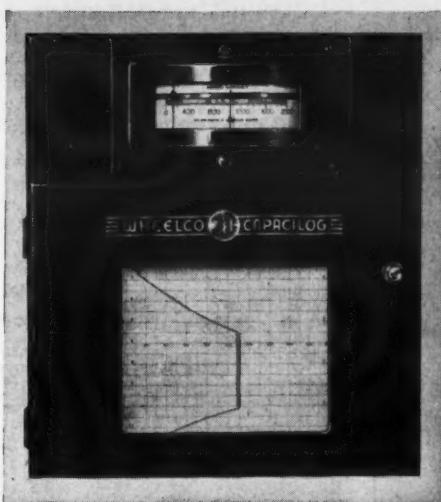


Timer for hazardous locations

Description: Microflex timer has cast iron enclosure with machined metal-to-metal seal. Micrometer dial is mounted on cover of case where it is easily adjustable and clearly visible. Standard dials are 120 sec, 20 min, 120 min, 20 hr and 60 hr. Timing accuracy 0.1% of full scale.

Source: Product of Eagle Signal Corporation, Dept. CP, Moline, Illinois . . . or for more information check CP 2086 on handy form, pages 2 and 3.

JULY, 1949



## Processing Industries are sold on the CAPACILOG because . . .

... Engineers like the fact that all functional parts of this Strip Chart Recorder are easily accessible. One needs only to open the door of the Capacilog to be impressed by the simplicity of its construction.

The instrument is completely front accessible. The strip chart assembly (1) swings out to give easy access to central motor drive terminals (2), voltage selector plug (3) and terminal panel (4). The electronic chassis (5), like the indicator are plug-in type. The vertical drive shaft (6) is separ-

able by means of a unique flexible coupling (7). A backlash adjustment (8) is mounted on the Pen Carrier.

These instrument refinements provide the ultimate in ease of maintenance and installation. To plant men the Capacilog represents the simplest and most economical system of measuring, controlling and recording process variables.

Whether your application is in the Metal, Chemical, Ceramic, Plastic or Laboratory Classification, there is a model for your purpose.

**WHEELCO INSTRUMENTS COMPANY**  
841 W. HARRISON ST., CHICAGO 7, ILL.

Please send me the Bulletin(s) checked below:

C2—Strip Chart Recorder  
 Z6500—Condensed Catalog

Name. . . . . Title. . . . .

Company. . . . .

Street. . . . .

City. . . . . State. . . . .

**WHEELCO** *Electronic* **CONTROLS**  
RECORDERS • COMBUSTION SAFEGUARDS • CONTROLLERS

When inquiring check CP 2087 on handy form, pgs. 2-3

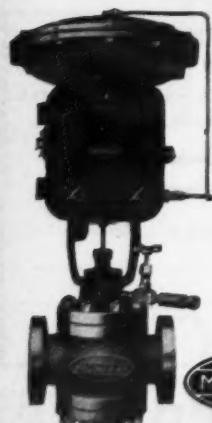
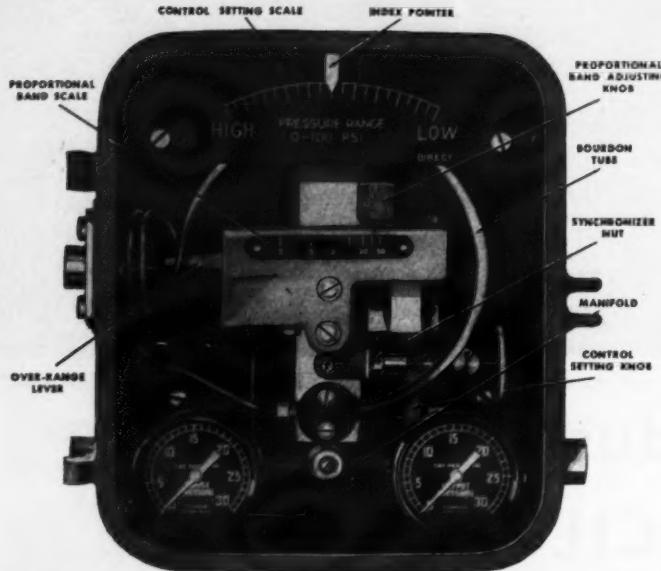
Here's the Pressure Controller You've Been Waiting for...

## The Masoneilan No. 2700

- Liberal Use of Corrosion Resistant Materials
- Easy and Readily Accessible Adjustments

### Look at these Features

1. Pneumatic proportionality accomplished with feed-back bellows and cantilever leaf spring.
2. Direct nozzle and flapper pilot with metering restriction.
3. Large powerful bourdon tube for greater response and control performance.
4. Wide selection of pressure ranges.
5. Cases for valve or wall mounting; also flush panel mounting.
6. Ease and accessibility of adjustment.
7. When steel construction is specified, controlled pressure connection, tubing to bourdon tube and entire bourdon tube assembly, are supplied with Type 316 Stainless Steel, in order to avoid corrosive effects.
8. Unit construction (proportional mechanism, nozzle block, etc.) and manifold.
9. Control action reversible with either bourdon or bellows.
10. Manifold construction prevents transmission of any possible case distortion to control mechanism.
11. Set point indication.



These controllers are designed for many industrial applications requiring accurate control where more expensive instruments are not warranted.

Applications include, among many others, pump governors, steam pressure reducing stations, gas well pressure reduction, etc., requiring small to intermediate proportional band.

The case is rugged and suitable for outdoor service; it is so designed that it may be mounted on the valve (on integral pad or by means of a U-clamp) or, if the occasion arises, it may be removed from the valve and mounted on a wall. A flush type case is also available for panel mounting.

MASONEILAN

### Mason-Neilan Regulator Company

1203 ADAMS STREET, BOSTON 24, MASS., U.S.A.

Sales Offices or Distributors in the Following Cities: New York • Syracuse • Chicago • St. Louis  
Philadelphia • Houston • Denver • Pittsburgh • Cleveland • Cincinnati • Tulsa • Atlanta  
Los Angeles • San Francisco • Salt Lake City • El Paso • Boise • Albuquerque  
Mason-Neilan Regulator Co., Ltd., Montreal and Toronto

When inquiring check CP 2088 on handy form, pgs. 2-3

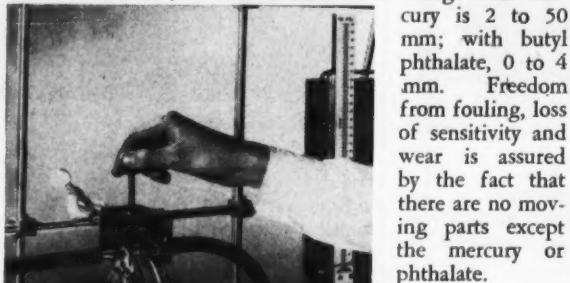
### PROCESS INSTRUMENTATION

**Sensitivity of vacuum regulator is plus-or-minus 0.05 mm in 2-50 mm range . . .**

plus-or-minus 0.01 mm in 0-4 mm range; instrument maintains sensitivity, serves as leak detector

Uses: For maintaining desired degree of vacuum in laboratory equipment. Useful for vacuum distillation, sublimation, extraction, pyrolysis, etc. Also serves as leak indicator.

Features: Sensitivity of plus-or-minus 0.05 mm with mercury in reservoir, and sensitivity of plus-or-minus 0.01 mm when butyl phthalate is employed.



Micrometer control screw is turned to regulate vacuum

This screw varies liquid head in regulator by tilting the regulator through any angle, from vertical for maximum pressure to horizontal for zero pressure. Stopcock is used for starting or stopping, or by-passing regulator.

Air leakage or vapor formation in vacuum system is indicated by rate at which these gases bubble through liquid in regulator. In this way, the unit serves as leak indicator.

Pyrex glass part is 6" high; overall height is 10". Metal housing that supports glass part is finished with corrosion-resistant, baked-on black enamel.

Source: Vacuum pressure regulator is a product of Fisher Scientific Co. and Eimer and Amend, Dept. CP, 717 Forbes St., Pittsburgh 19, Pa. . . . or for more information check CP 2089 on handy form, pages 2 and 3.

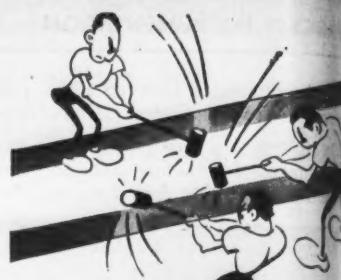
**Check sample temperatures by API, ASTM spec's . . .**

thermometers for measuring, sampling, testing crude oil prove useful in general work

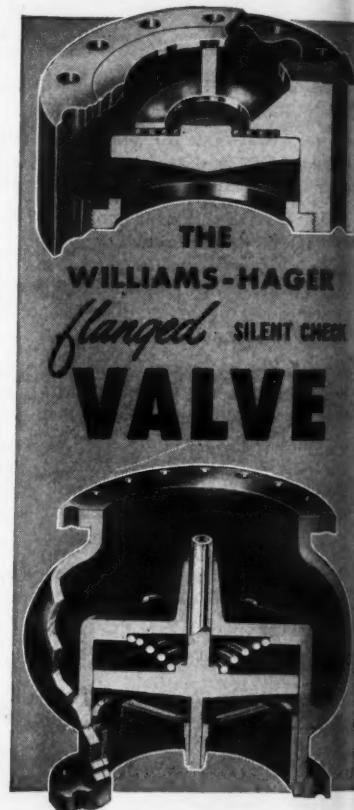
Uses: Originally designed for measuring, sampling and testing crude oil, these two thermometers should find use as general test thermometers.

Features: Meet specifications of API Code 25, and ASTM 58F-48T and 59F-48T.

Description: 16-3/4" cup case thermometer is made in 2 ranges: minus 30 to plus 120°F and 0 to 180°F. Accuracy is plus-or-minus 1/2°F. Reading is made easy by Binoc tubing, large figures and clearly marked 1° scale divisions. Case is made of warp-resistant oak. 100-cc non-sparking brass cup holds sufficient sample at proper immersion of thermometer tube to maintain temperature while sampling is made.



# STOP WATER HAMMER



The Williams-Hager Flanged Silent Check Valve is available for every service . . . bodies of Iron, Semi-Steel, Cast Steel, Government Bronze, Stainless Steel or Monel Metal . . . fitted with seats and discs of either Government Bronze, Stainless Steel or Monel. Standard sizes from 1 inch to 20 inches. Write for new technical bulletin.

### THE WILLIAMS GAUGE CO.

Pump Valves . . . Water Gauges . . . Gauge  
Cocks . . . Steam Traps . . . Pump Governors  
. . . Feed Water Regulators . . . Water Columns

3015 PENNSYLVANIA AVE. • PITTSBURGH (12), PA.

When inquiring check CP 2090 on handy form, pgs. 2-3

# JERGUSON Explosion-Proof GAGE ILLUMINATORS

Give Even,  
No-Glare  
Low Cost Lighting  
Greater Safety  
Of Operation  
Faster, Easier  
Gage Reading

JERGUSON Explosion-Proof Gage Illuminators give you the best, lowest cost, most efficient gage lighting.

Utilizing the principle of solid wedge lighting, Jerguson Illuminators give clear, even lighting, without bright spots. Light flows through the plastic wedge and is reflected evenly through the back of the gage glass to give quick, easy, accurate reading. You get better illumination at lower cost because only one small lamp is required. Savings in electricity soon pay for the illuminator.

Jerguson Illuminators have aluminum explosion-proof housing for the wiring and heat resisting glass explosion-proof housing for the lamp. You get maximum safety, more efficient lighting with Jerguson. Made for all sizes of transparent gages. It will pay you to investigate.

Illustration shows single and double Jerguson Illuminators on a 3-section gage. Write today for full information. Ask also for Data Units on Jerguson Gages and Valves to fit your needs.

**JERGUSON**  
GAGE & VALVE  
COMPANY  
100 Fellsway, Somerville 45, Mass.  
Representatives in Major Cities  
Phone Listed Under JERGUSON

When inquiring check CP 2091  
on handy form, pgs. 2-3

JULY, 1949

## PROCESS INSTRUMENTATION

Armored thermometer is 12" long. Binoc etched stem is encased in non-sparking brass armor. Ranges are same as those of cup case thermometer.

Source: Manufactured by Taylor Instrument Companies, Dept. CP, 95 Ames St., Rochester 1, N. Y. . . . or for more information check CP 2092 on handy form, pages 2 and 3.

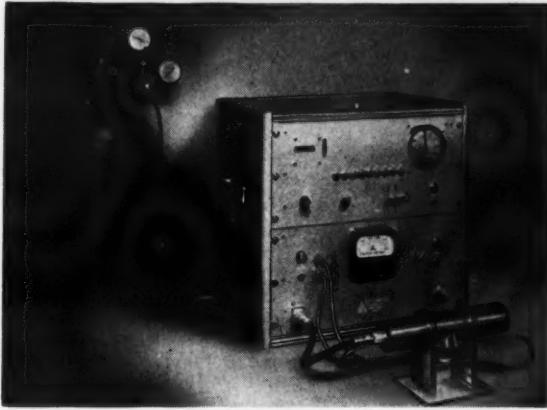
**Scaler counts all radiations  
with extreme precision,  
reproducibility . . .**

proportional counter unit features long, flat plateau, low resolution-loss

Uses: To count alpha radiation, or alpha, beta, and gamma radiations.

Features: Low resolution-loss; extremely long, flat plateau; much greater tolerance to air.

Description: Nucleometer-Scaler consists of proportional counter tube, regulated high-voltage supply, ampli-



Precision radiation scaler

fier, pulse equalizer, scaling circuit, gas supply and two-stage gas regulator.

Counter tube may be either internal sample or external sample type. With internal sample type, sample is placed in well and slid directly into counter volume, giving 50% geometry and no window absorption. This counter is designed for counting soft radiation and for making counts of utmost sensitivity. External sample type has thin window and is furnished with standard Lucite mount. Used where variations in geometry are desired, and when absorption measurements are required.

Resolution loss is less than 2% at 100,000 counts per min. Plateau length is from 500 to 700 volts; slope is 0.5% per 100 volts for internal sample counter, from 1 to 3% per 100 volts for external sample counter. Very short flushing time is obtained with use of an airlock to introduce samples directly into counter, since tolerance to air is much greater than for Geiger tubes. Chemical breakdown of gas (specially-purified methane) is reported to be one-thousandth that experienced with Geiger tubes.

Scaler is Higinbotham type with scale of 512. Alternate scales of 64, 128, and 256 may be selected by means of switch. Unit is designated as Nucleometer-Scaler Mark 9, Model 3.

Source: Produced by Radiation Counter Laboratories, Inc., Dept. CP, 1844 W. 21st St., Chicago 8, Ill. . . . or for more information check CP 2093 on handy form, pages 2 and 3.

# POWERS



## Help Cut Costs—

For more accurate temperature readings and improved efficiency use POWERS Dial Thermometers. They're vapor pressure actuated. Have 4" dials with either rigid stem for use in pipe lines and tanks or flexible tubing type for conveniently showing the temperature at a remote point. For further information and prices phone or write our nearest office. Offices in 50 cities. Over 55 years of automatic temperature control.

(DT2)

## WRITE FOR BULLETIN 355

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2756 Greenview Ave., Chicago 14, Ill.  
Gentlemen: Please send me Bulletin 355.

Name. \_\_\_\_\_ Title. \_\_\_\_\_

Firm Name. \_\_\_\_\_

Address. \_\_\_\_\_



When inquiring check CP 2094 on handy form, pgs. 2-3



## New Texrope Sheave Gives Lowest Cost Instant Speed Control

- Covers most speed changing needs from 3 to 20 hp
- Very simple — one sheave does all
- Infinitely variable speed — 100% increase; 2 to 1 range.

THE NEW *Vari-Pitch* AUTOMATIC SHEAVE is the simplest, most economical method of instant speed control ever devised. You just move the motor forward to increase speed and move the motor back to decrease. The *Vari-Pitch*

Automatic Sheave changes pitch diameter and holds the belts at proper tension automatically.

Now, you can cut unit costs by operating machines at most efficient speed . . . improve quality by compensating for material variation . . . with a very small investment in new equipment. Today, ask your A-C Authorized Dealer or Sales Office to give you complete facts and figures on how the new *Vari-Pitch* Automatic Sheave can save money in your plant. Or write for bulletin 20B7223. A-2767

ALLIS-CHALMERS, 1151A SO. 70 ST.  
MILWAUKEE, WIS.

*Texrope* and *Vari-Pitch* are Allis-Chalmers trademarks.

# ALLIS-CHALMERS

When inquiring check CP 2095 on handy form, pgs. 2-3

## PROCESS INSTRUMENTATION

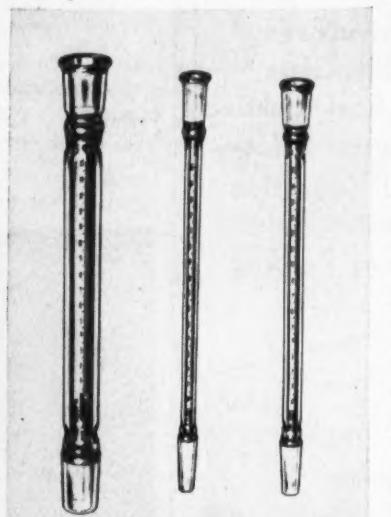
### Measures most flows found in lab . . .

set of three rotameters covers 3-110,000 cc/min air, 0.064-3,800 cc/min water-flows

Uses: Measurement of flow of gases and non-viscous liquids in laboratory.

Features: Set of 3 rotameters covers air flows from 3 to 110,000 cc/min and water flows from 0.064 to 3,800 cc/min.

Description: Each instrument contains a glass and a stainless steel ball. For extreme corrosive conditions, instruments with single glass ball are available. Each instrument is supplied with ground glass male and female outlet so that all-glass, as well as conventional rubber-tube connections, may be made.



Rotameter set for laboratory

viscous liquids (viscosities not too much above that of water), for which only the densities need be known.

Source: Products of Emil Greiner Company, Dept. CP, 20-26 N. Moore St., New York 13, N. Y. . . or for more information check CP 2096 on handy form, pages 2 and 3.

### Controls heating or cooling on preset schedule . . .

easily-changed cams set relationship of temperature to time during cycle; for use to 1000°F

Uses: Programming of heating or cooling cycles.

Features: Change of program is quick, simple matter of changing cams.

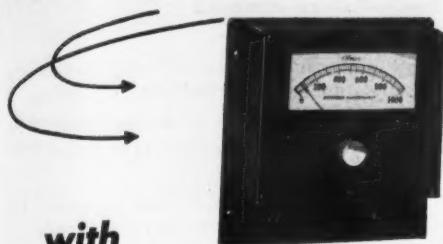
Description: Time-temperature program is first laid out on blank cam. Cam is then cut to lay-out line and placed on controller. Roller arm follower, coupled to temperature-setting mechanism of controller, follows contour of cam as it is rotated by clock mechanism. Rotation of cam changes temperature setting with respect to time, according to configuration of cam.

Model ATC time-temperature controllers have standard recorder pen and chart so permanent record of program is kept. They are equipped with one of three types of Micro

Switch: Normally closed, for 2-wire control circuit use; normally open, also for 2-wire control circuit; SPDT for 3-wire control circuit applications. Capacity of switches is 4 amp at 125 volts or 2 amp at 250 volts AC non-inductive load, or 50 VA on inductive loads. A relay is used between controller and load when larger loads are to be handled.



# WATCH THAT HEAT!



with

## Alnor Precision Pyrometers

Watching the temperature is an important part of quality control all over the industrial map—for die-casting, heat-treating, bake-oven work, etc.—and no batch is better than the pyrometer which measures its temperature. That's why so often you'll see battery after battery of heat-treating furnaces, bake-ovens, etc., equipped with Alnor Type RM pyrometers. These inexpensive single circuit units are precise instruments, water-proof, dust-tight, and fume-proof. Are available in scale ranges from 0-400° F. to 0-3000° F., and equivalent Centigrade scales can be furnished.

Send for complete Pyrometer Bulletin. Bulletin 4361 describes the complete line of Alnor pyrometers.

**Alnor**

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FOR EVERY INDUSTRY

ILLINOIS TESTING LABORATORIES, INC.  
Room 504, 420 N. La Salle St. • Chicago 10, Ill.

When inquiring check CP 2097 on handy form, pgs. 2-3



• FOR GAUGING LIQUIDS  
OF ALL KINDS  
• 100% AUTOMATIC  
• APPROVED BY  
UNDERWRITERS'  
LABORATORIES

WRITE FOR COMPLETE DETAILS

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18-18 SKILLMAN AVE., LONG ISLAND CITY, N.Y.

When inquiring check CP 2098 on handy form, pgs. 2-3

JULY, 1949

## PROCESS INSTRUMENTATION

Choice of elements permits use of controller in ranges from 0-150° F. to 100-1000° F. Elements are mercury-actuated, sealed with special diaphragm. This eliminates lost motion, and assures positive, powerful and accurate drive to operating levers, it is reported. Made of steel, elements can be safely bent to facilitate placement of mercury bulb in most advantageous spot. Alloy bulbs and sleeves are available for withstanding corrosion. Standard element length, 5'; can be provided in lengths to 20', if desired.

Either an electric or spring-driven clock can be specified to drive chart and cam. Electric clocks are either 110 or 220-volt AC. Spring-driven clock must be used with DC loads. In addition, when DC load exceeds 10 watts, switch mechanism must be protected by using a condenser and resistance in series, shunted across control terminals.

Source: Product of The Partlow Corporation, Dept. CP, 4 Campion Rd., New Hartford, N. Y. . . or for more information check CP 2099 on handy form, pages 2 and 3.

### Control static pressure or vacuum . . .

units cover various ranges between 0 and 20" WC; differentials are fixed or variable

Uses: Control of static pressure or vacuum. Examples are: static pressure control in intake duct of fan; measuring pressure drop across filter and sounding alarm when it reaches some predetermined value, etc.

Features: Sensitive units are for use on control applications in range of 0 to 20" water pressure or vacuum.

Description: Available in two types: Cat 101 and 102.

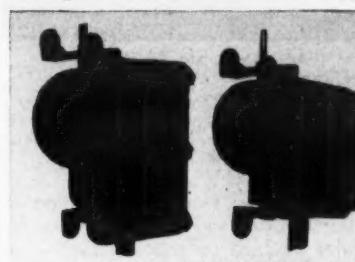
First has range adjustments only, the cut-in and cut-out points being determined by the fixed differential. This provides a direct start-stop circuit without use of relays. Selection of ranges and fixed differentials is provided.

Cat 102 controller has two switches. Operating range can be adjusted, and the differential can be adjusted from one-half the nominal value to about twice the nominal value. Three terminals are provided, one being the common terminal and the other two the high and low terminals. The two switches are wired so that these three terminals are connected in same manner as any other type floating contact switch.

The latter type, Cat 102, is particularly useful with reversing-type damper-control motors, or on similar applications where definite static pressures are to be maintained.

Explosion-proof, dust-proof and splash-proof types are obtainable. Electrical ratings are approved by Underwriters' Laboratories for 10-amp, 125-volt or 5-amp, 250-volt AC. Usually not recommended for use with liquids.

Source: Static pressure controls are made by Coral Designs, Dept. CP, P.O. Box 248, Forest Hills, N. Y. . . or for more information check CP 2100 on handy form, pages 2 and 3.



Explosion-proof (left) and dust-proof (right) static pressure controls

For the latest on . . . . .

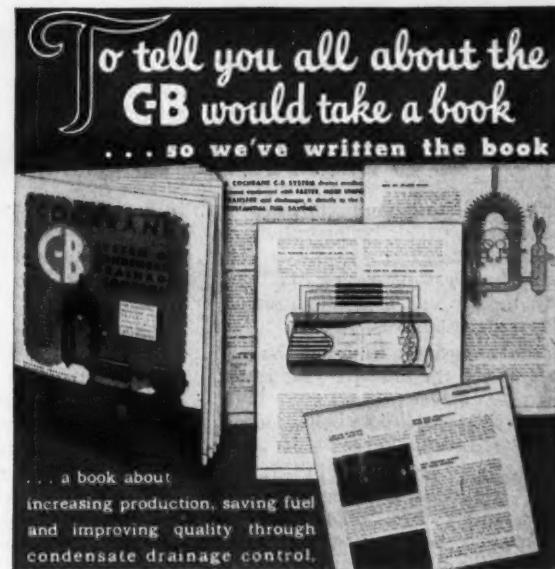
- *Visible FLOW metering*
- *Linear FLOW scales*
- *Recorders, Controllers, Totalizers (close-coupled or remote)*
- *Pneumatic Transmitters*
- *Ratio Controllers*
- *Batch Controllers*
- *Diaphragm Motor Valves*

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F & P makes FLOW meters for slurries; viscous, corrosive and abrasive fluids; 0.01 cc/min to 10,000 gpm; temperatures from -350° F to +1500° F; pressures to 10,000 psig.

**FLOWRATOR** FISCHER & PORTER CO.  
TRADE MARK  
Dept. 95-9E HATBORO, PA.

When inquiring check CP 2101 on handy form, pgs. 2-3



### WRITE FOR YOUR COPY

COCHRANE CORPORATION  
3162 N. 17th Street, Philadelphia 32, Pa.

I would like to know more about the C-B System of Condensate Drainage Control. Send me a copy of Publication 3250.

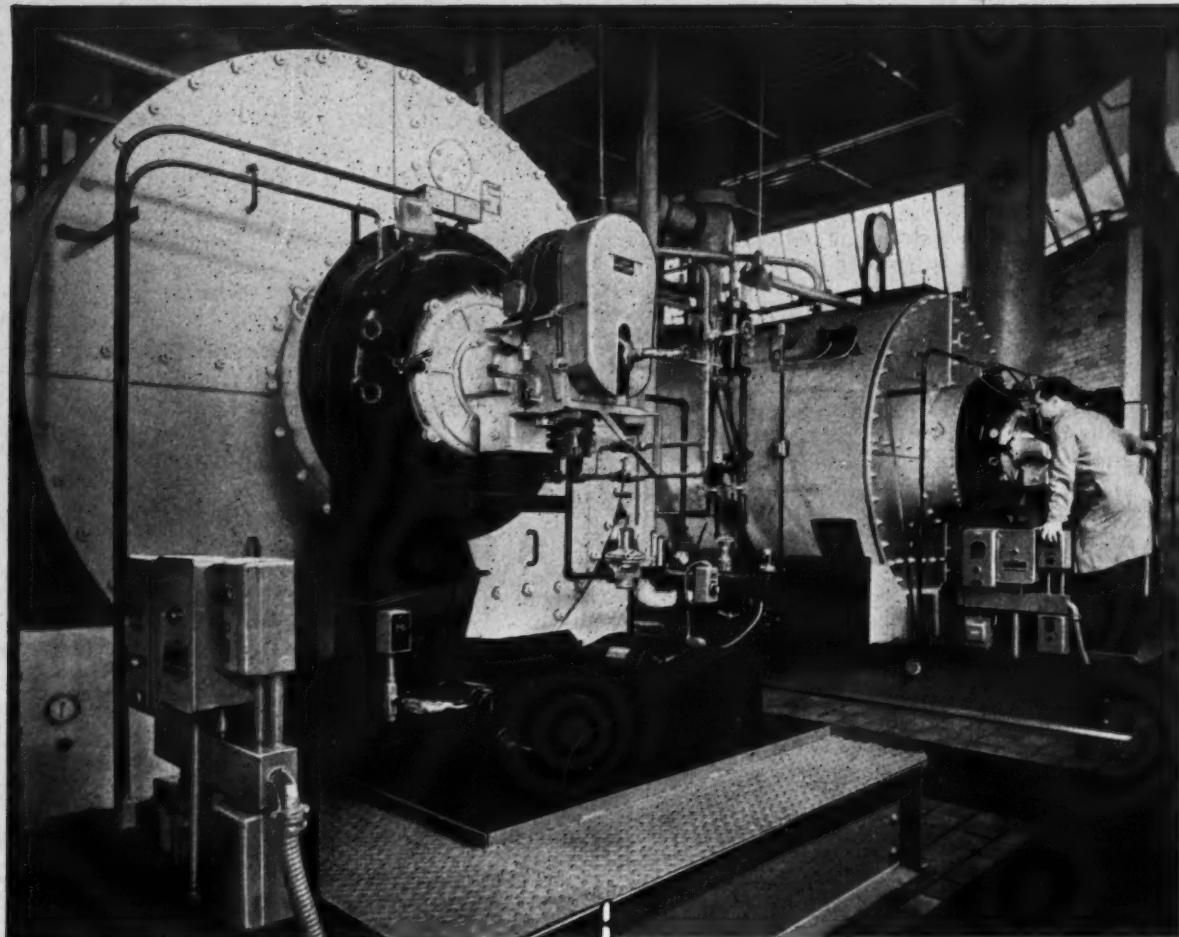
Name \_\_\_\_\_ Title \_\_\_\_\_

Firm \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_

When inquiring check CP 2102 on handy form, pgs. 2-3



Never  Forget

## BOILERS BURN DOLLARS . . .

**Yes** — generating steam costs money — money for fuel, boiler operation, care and maintenance. An old or outmoded fuel-wasting boiler can burn many hidden dollars through excessively high steam costs.

It's sound business to install boilers that give you the most for your steam dollars — modern, guaranteed high efficiency Cleaver-Brooks boilers, using oil or gas as fuel.

For any boiler installation (15 to 500 HP.) — new or replacement — Cleaver-Brooks offers these immediate and long-range cost-saving advantages:

**A Custom-Planned Boiler Engineered for Your Needs:** Your steam needs and steam-using equipment are studied — your present steam load

plus your estimate of future expansion are considered — with this information the size of Cleaver-Brooks Boiler best suited to your specific needs is determined.

**Factory Starting Service:** Your boiler is placed in operation by Cleaver-Brooks factory service-engineers. Your operators are trained in operation, care and maintenance.

**Flexible Operation Burning Gas or Oil With Equal Efficiency:** You can use oil, gas, or combination oil and gas, whichever is of lower cost. Through their high heat transfer, Cleaver-Brooks boilers operate at a guaranteed efficiency of 80% from full load down to 30% of rating.

In addition, Cleaver-Brooks boilers

give you clean, smokeless operation — eliminate fuel and ash handling — require no high or costly stacks — no special foundations — fit under low headroom — provide quick steaming, flexible operation to meet fluctuating loads — fully meet all codes. Available in sizes 15 to 500 HP., 15 to 200 P.S.I. — write for Cleaver-Brooks steam boiler bulletin.

**CLEAVER-BROOKS COMPANY**  
343 E. Keefe Ave., Milwaukee 12, Wis.

WRITE on your business letter-head for Steam Cost Calculator — a ready reference slide rule showing comparative steam costs when using oil, gas, or coal as fuel. Mailed on request — no obligation.

**Cleaver-Brooks**  
STEAM BOILERS



When inquiring check CP 2103 on handy form, pgs. 2-3

## PROCESS INSTRUMENTATION

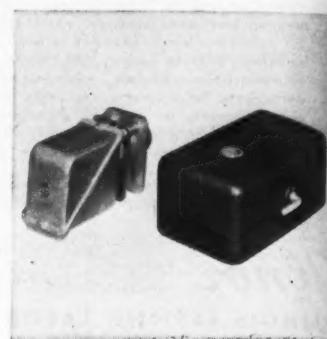
### Prevents flame-failure dangers on commercial oil burners . . .

when flame dies, control starts burner, programming valve-opening, post-ignition, priming, scavenging

**Uses:** Protects commercial-size oil burners from flame failure hazards, and provides automatic programming for these burners.

**Features:** Optical system on photoelectric scanner has heat-absorbing filter. Hinged shutter permits cleaning of lens without shutting down. Rugged scanner is small so it can be mounted on any type of burner. It is immune to moisture and electrical leakage.

**Description:** Fireye System FF-1 includes scanner Type 45PH5 and programming control Type 24PJ8. Scanner, consisting of phototube and vacuum tube amplifier housed in compact, dust-tight aluminum case, mounts on burner so that it has clear view of oil flame. When flame fails, it signals programming control instantly.



Oil burner combustion safeguard is made up of scanner (left) and programming control (right)

Programming control automatically starts burner in operation and programs sequence of fuel valve opening, post-ignition time, priming and scavenging. Timing cams are driven by specially designed high-torque synchronous motor. Fuel valve delay and post-ignition periods can be easily set in seconds. Opening and closing of power contacts is by snap-action. Regular electrical wiring (not coaxial cable) is used between scanner and control.

Operates on 115/230-volt, 60-cycle AC. Burner motor is 1 hp. Load ratings follow: pilot duty — 125va; ignition — 250va; fuel valve solenoid — 100va; gas pilot valve solenoid — 25va. Scavenging period is 23 sec, fuel valve delay 5-30 sec, post-ignition period 30 sec minimum to 80 sec maximum.

**Source:** Manufactured by Combustion Control Corporation, Dept. CP, 77 Broadway, Cambridge 42, Mass. . . or for more information check CP 2104 on handy form, pages 2 and 3.

### Detects extremely minute leaks in any pressure system . . .

sampling probe and leak detector register flow-rates of helium of order of  $5 \times 10^{-8}$  cc per sec.

**Uses:** To detect extremely minute leaks in pressurized systems, such as refrigeration equipment, turbines, stills, reactors, tanks, cookers, etc.

**Features:** Detects helium flow-rates of the order of  $5 \times 10^{-8}$  cc per sec. Convenient, quick detection.

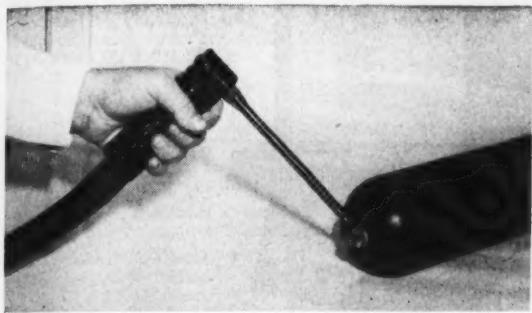
**Description:** Leak detector operates at vacuum of 10<sup>-4</sup> mm of mercury; draws samples into mass spectrometer tube, which accomplishes electronic separation of helium molecules from other elements in atmosphere. Helium flows of  $10^{-6}$  cc per sec. may be detected under optimum conditions, corresponding to leak of 1 cc in 31 years. Signals from mass spectrometer tube are amplified, sent to

## PROCESS INSTRUMENTATION

leak rate meter, and may be employed to operate an audio or visual alarm.

Sampling probe consists of metal probing rod and a handle with adjustable constriction.

Probe is connected to leak detector by  $1/2$ " I.D. flexible neoprene vacuum hose, less than 10' in length. To operate probe, adjustment wheel is turned clockwise until constriction is closed. Leak detector is turned on and allowed



Testing for minute leaks in pressure cylinder

to build up vacuum, and mass spectrometer tube, designated as the Diatron, is turned on. When unit has reached proper vacuum, probe constriction is opened until vacuum stabilizes at  $10^{-4}$  of mercury. Probe is then moved over surface of equipment to be examined.

Sensitivity of detection depends upon speed of probe tip over surface, position of tip with respect to surface, and concentration and pressure of helium in system under test. If rubber sleeve is used over probe tip, sensitivity is increased 10 to 100 times, and area which the probe samples in any one position is correspondingly restricted.

Sensitivity varies directly with concentration of helium in the pressurizing gas. Sensitivity also varies approximately as the square of the absolute pressure. Running tests on equipment with reduced helium concentrations and with pressures slightly above working pressures, therefore, offers greater sensitivity and economy. Furthermore, this permits detection of leaks which appear only under high pressure, and which close when the pressure drops.

Source: Produced by Consolidated Engineering Corp., Dept. CP, 620 N. Lake Ave., Pasadena, Calif. . . . or for more information check CP 2105 on handy form, pages 2 and 3.

### Measures color, gloss, sheen, reflectance, transmission

Multipurpose reflectometer is described, and instructions for its operation are given in 8-page bulletin. Applications are noted, description of null-type operating principle is set forth, and attachments and modifications for special conditions of measurement are discussed. Tables list details of different measurement procedures, give wavelength response of spectrophotometry filters.

Warm-up procedure is outlined, and operation for determining reflectance, low gloss, specular gloss, contrast gloss, color, and transmission is detailed. Sample data sheet illustrates computation of color quality. Photos, schematic drawings supplement text.

"Description and Instructions on Multipurpose Reflectometer", issued by Henry A. Gardner Laboratory, Inc., Dept. CP, 4723 Elm St., Bethesda 14, Md. When inquiring specify CP 2106 on handy form, pages 2 and 3.

**Only Beckman Glass Electrodes offer all of these features:**

- **RAPID RESPONSE** . . . accuracy with speed and convenience.
- **STABILITY** . . . to match the high precision of BECKMAN pH METERS.
- **INTERNAL SHIELDING** . . . gives complete freedom from outside electrostatic interference.
- **INTEGRAL LEADS** . . . continuous insulation into the electrode . . . connections located on protected panel board.
- **EXTREME TEMPERATURE RANGE** . . . Several types permit use from below

freezing to boiling and above!

- **ENTIRE pH SCALE** . . . very small sodium ion errors . . . e.g., with high-temperature high-pH glass, only 0.2 pH deviation at 13.7 pH in 1 N sodium hydroxide.
- **FACTORY SEALED** . . . rigidly tested . . . no maintenance.
- **UNIQUE CHEMICAL DURABILITY** . . . in alkali . . . in acid . . . in dilute solutions.

And . . . **REALLY TOUGH** . . . can even be used as a stirring rod!

These new electrode glasses are now being used in several Beckman electrode styles. As rapidly as possible, they will be available in the full line of Beckman Glass Electrodes.

**Constant Research over the years has maintained Beckman Leadership in the instrumentation field . . .**

**—Beckman pH Meters and Glass Electrodes**  
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**control modern industries**

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When inquiring check CP 2107 on handy form, pgs. 2-3

# ACCURATE TEMPERATURE INDICATION



Model F-1 Thermometer priced from \$22.

Temperature indication is provided economically for chemical processing with the Auto-Lite Indicating Thermometer shown above. Dial head can be mounted where temperature observation is most convenient. Other styles and types available.

Write for catalog.

**THE ELECTRIC AUTO-LITE COMPANY**  
INSTRUMENT AND GAUGE DIVISION • TOLEDO 1, OHIO  
NEW YORK CHICAGO SARNIA, ONTARIO



When inquiring check CP 2108 on handy form, pgs. 2-3

**Wider Range**  
More Accurate Performance  
**ENGEHARD**  
**TERMOCOUPLES**

The individual parts of Engelhard Thermocouples are selected and assembled to meet your specific conditions of atmosphere and temperature. They combine correct thermo-elements, insulators, protection tubes, terminal heads, couplings and necessary accessories. Thermo-elements may be:

Platinum vs Platinum 90%-Rhodium 10%  
Reclaimed Platinum vs Platinum-Rhodium  
Chromel vs Alumel  
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More than 40 years of research and instrument building can help answer your temperature measurement problems. Just fill out coupon below for complete information.

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ADDRESS \_\_\_\_\_

J-3

CE-100

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850 PASSAIC AVENUE, EAST NEWARK, N.J.

When inquiring check CP 2109 on handy form, pgs. 2-3

Page 54

## PROCESS INSTRUMENTATION

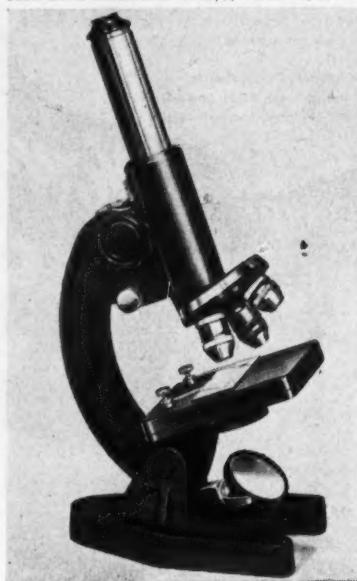
### Professional performance from economical microscope . . .

lab unit passes classical test of resolving structure of the Pleurosigma diatom

Uses: Intended for microscopic routine tests and laboratory checks.

Features: Professional performance, yet economical. The 4mm dry objective lens resolves the structure of the diatom, Pleurosigma — the classical test for professional performance.

Description: Standard Model F microscope has 12x standard-diameter Huygenian eyepiece and parfocal triple nosepiece with 16, 8 and 4mm achromatic objectives. This arrangement covers range from 100x to 600x. However, complete line of standard eyepieces and objectives, including oil-immersion, is available to permit magnification up to 1500x at high numerical apertures.



Economical laboratory microscope

stage consists of removable condensing lens and iris diaphragm which permits critical adjustment of the light reflected from the 3-motion plano-concave (on opposite sides) mirror.

Dural arm can be inclined for convenience of observation. Removable spring clips hold slide firmly. Stage is large, heavy, acid-proof and scratch-resistant. Every moving part can be compensated for wear.

Source: Made by Testa Manufacturing Company, Dept. CP, 418 S. Pecan St., Los Angeles 33, Calif. . . or for more information check CP 2110 on handy form, pages 2 and 3.

### Films put down by applicator are of known thickness . . .

clearance, read directly on scale, can be adjusted quickly while applying coating

Uses: Applying known thickness of films in routine film-forming operations, hiding power determinations, color intensity measurements and wrinkling studies.

Features: Clearance is so easily adjusted that it is possible, if desired, to vary film thickness several times during application of film. Clearance adjustments indicated directly; feeler gauges and other indirect reading aids not required. Clearance accurate to plus-or-minus 0.1 mil. Close correspondence between thickness of wet film and mechanical clearance, even with protective coatings having widely different rheological properties.

## DEPENDABLE ACCURACY ALWAYS!

### HUPPERT Model 4 De Luxe FURNACE

- Gives you identical duplication of any desired result
- Equipped with the Huppert Automatic Temperature Control — Any temperature from 100° to 1800° F. maintained
- Current consumption 1200 watts



Huppert's Model 4 DeLuxe Furnace has Kanthal elements, totally enclosed contacts and counterweighted door. 110 V AC only. 1D 4 1/8" x 3 3/4" x 6"; O.D. 14" x 16" x 16". Wt. 40 lbs.

Complete with Huppert Automatic Control and Pyrometer \$100.00

Same Model but All Stainless Steel Construction \$117.50

Standard Model 4, manually controlled, also available.

Write for complete literature

### K. H. HUPPERT CO.

6822 Cottage Grove Ave.  
Chicago 37, Illinois

When inquiring check CP 2111 on handy form, pgs. 2-3

## CAMBRIDGE

### pH INDICATORS and pH RECODERS

### single — and multi-point

In addition to portable pH Meters, Cambridge makes Direct-Reading pH Indicators and Recorders for permanent installation. They are line-operated, accurate and provide trouble-free performance. The Recorder or Indicator may be located at any reasonable distance from one or several sampling points.



Send for Bulletin No. 910 T.

Direct Reading pH Indicator Control Panel

### CAMBRIDGE pH EQUIPMENT

CAMBRIDGE INSTRUMENT COMPANY, INC.  
PIONEER MANUFACTURERS OF PRECISION INSTRUMENTS  
3706 Grand Central Terminal, New York 17, N.Y.

When inquiring check CP 2112 on handy form, pgs. 2-3

CHEMICAL PROCESSING Preview

**B**  
**W**

*All Electric  
Floatless...*

**LIQUID LEVEL CONTROLS**

Control variations in levels from  $\frac{1}{4}$ " upward. Remote control if desired — any distance. Controls unaffected by acids, caustics, pressures or temperatures.

Since 1933 B/W Controls have provided positive, dependable, economical liquid level control. No floats! No vacuum tubes! No moving parts in liquid.

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**B/W CONTROLLER CORPORATION**

FIRST and FOREMOST  
IN THE FLOATLESS  
CONTROL FIELD

Birmingham, Michigan  
2204 E. Maple Road

When inquiring check CP 2113 on handy form, pgs. 2-3



*yield dividends  
in stainless welds*

Every Arcos electrode is the product of careful testing and retesting during development, followed by the close adherence to specification for raw materials, and very strict application of quality controls in manufacturing.

THAT is why Arcos electrodes, in the hands of a competent welder, give consistently sound, trouble-free welds.

THAT is why Arcos electrodes deposit weld metal physically, chemically and metallurgically right for the job at hand.

THAT is why every day of welding with Arcos electrodes yields maximum production. Costly non-productive time, chipping and rewelding or repairing weld failures is eliminated.

These are the reasons why the pound price of Arcos electrodes is not a true measure of the value of the welds developed from them.

Use Arcos quality control-led stainless electrodes to keep your weld costs low.



When inquiring check CP 2114 on handy form, pgs. 2-3

JULY, 1949

## PROCESS INSTRUMENTATION

**Description:** Baker film applicator was developed by the Protective Coatings Laboratory of The Baker Castor Oil Company. It consists of a cylindrical applicator section that applies the film; end cylinder bearing sections for supporting application section; an axial shaft that allows rotation of applicator barrel relative to end guide plates, and gives desired clearance; end guide plates which stabilize position of applicator on plane surface; and locking nuts for holding setting of cylindrical applying section during operation.

In operation, applicator is placed on plane surface and lock nuts are loosened. Barrel is rotated to position where required clearance, as marked on barrel index scale, is aligned with bench marks on guide plates. Lock nuts are then tightened. Coating material is poured in front of applicator, and the unit is drawn over the puddle to lay down the film. Applicator rests on bearing shoulders while in operation, not on guide plates.

Clearance adjustable from 0 to 10 mils in standard model; other clearance ranges can be supplied.

Available in widths of 2, 3, 4, 5, 6, 7". Wedge guides are available for the 4" applicator. Use of these permits application of wedge-shaped films, increasing in thickness across width of applicator. All parts of applicator are machined from stainless steel to tolerance of plus-or-minus 0.0001".

**Source:** Being produced by Henry A. Gardner Laboratory, Dept. CP, 4723 Elm St., Bethesda 14, Md. . . . or for more information check CP 2115 on handy form, pages 2 and 3.

### Heat organic combustion samples in 1/10th previous time

Article discussing new method of heating organic combustion samples and tube filling is included in 40-page scientific apparatus catalog. Pictures compare construction of standard insulated combustion furnaces with construction of radiant heating, non-insulated furnace. Text points out transmission of radiant heat by Pyrex or Corning No. 172 glass permits heating sample at higher temperature than the tube which holds the sample. Oxide-coated aluminum shell is stated to lose less heat than standard insulated shell on conventional furnaces. Describes heating and cooling rates of new furnace as less than 1/10th ordinary rates, and points out that elements may be run cooler, and generalized heating of experimental environment is reduced.

Laboratory glassware, ovens, new, sturdy Abbe refractometer for plant use, primary standards, and accessories are also covered. "Scientific Apparatus and Methods", issued by E. H. Sargent and Co., Dept. CP, 155-165 E. Superior St., Chicago 11, Ill. When inquiring specify CP 2116 on handy form, pages 2 and 3.

### Dry distribution transformers require no maintenance

Air-cooled, all-purpose distribution transformers are pictured and discussed in 4-page, 2-color bulletin. Suitable for indoor or outdoor use, units are available with heatproof class B or C insulation, such as fibre glass, mica, porcelain, Quinterra, etc., and may be installed anywhere without need of enclosing in vaults or fireproof containers. Mounting accessories, tank finishes are also pictured.

Bul. 49-ACO, issued by Marcus Transformer Co., Inc., Dept. CP, 32-34 Montgomery St., Hillside 5, N. J. When inquiring specify CP 2217 on handy form, pages 2 and 3.

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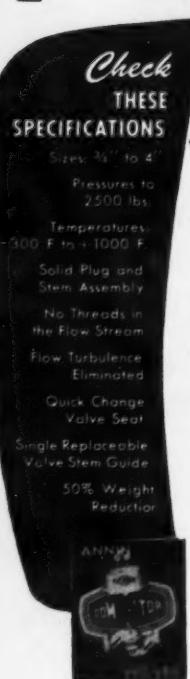
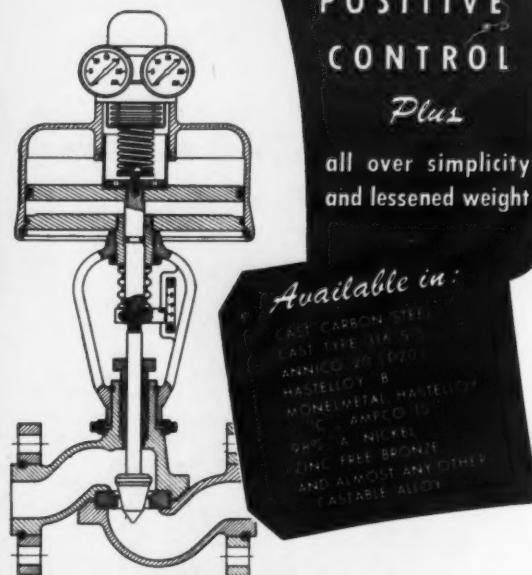
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The Domotor is a single seated valve embodying design improvements making possible smooth positive control. With the single valve seat,

clean smooth flow passages increase capacity and make the valve suitable for handling erosive, corrosive or viscous fluids. Again, with the single valve seat serving as a bridge, the two-piece valve body may be rotated in assembly to form a right-hand angle, left-hand angle or straight through pattern. Replacement of valve seat and plug assembly is established in a matter of minutes, on the job and without special tools. Both valve body and power unit afford maximum reductions in maintenance and simplicity of parts and part interchangeability. Weight savings up to 50% in most of a wide range of alloys.

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A new bulletin showing installation and operating features of the Domotor Valve will be sent to you upon request.

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Investigate



When inquiring check CP 2119 on handy form, pgs. 2-3

Page 56

## U. S. Bureau of Mines Starts Production of Synthetic Fuels in Missouri

First of two plants making gasoline from coal is now running; operating data will be invaluable for new industry

EDICATION ceremonies were held May 7 and 8, 1949, for two Bureau of Mines coal-to-oil demonstration plants at Louisiana, Mo. The first of these, now in operation, produces gasoline and byproducts by the Bergius process of coal hydrogenation. The second, soon to be producing, will employ a modified Fischer-Tropsch synthesis to produce gasoline and byproducts from gasified coal.

These plants are the result of close study of German techniques used during the war, plus research and development in this field in the U. S. From these preliminary evaluations, it has been found that the German processes could be made more economical, and they have been modified before being incorporated into the plants.

Bureau of Mines officials expect to test many ideas that have been developed in the laboratory. Plants are large enough to provide operating data which will be valuable for companies planning to enter into production of synthetic fuels. In addition, they will provide a nucleus of operators in this country who are trained in this field.

In the coal hydrogenation process, hydrogen is added to the coal catalytically, under high temperature and pressure. There are 2 major steps: liquid-phase hydrogenation which accomplishes liquefaction of the coal, and vapor-phase hydrogenation which converts the liquefied coal to gasoline and byproducts. Plant output is 200 to 300 barrels of gasoline per day, depending upon coal and catalyst used.

### Description of Process

Dried, pulverized coal is mixed with a small quantity of catalyst (such as iron oxide or tin oxalate) and with a heavy oil obtained from the liquid-phase process. The viscous 47%-solids paste formed is injected into steam-jacketed radiant-type preheater by steam-driven plunger pump operating at 10,000 psi. Some hot hydrogen is added here to start the reaction. Paste leaves preheater at approximately 815°F.

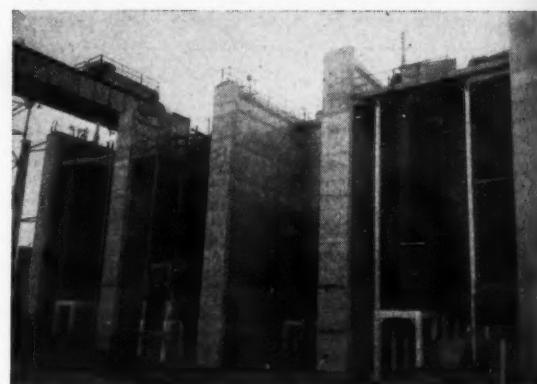
Hot paste flows upwards through two converters arranged in series, hydrogen being added at different levels. In these units, the solid coal is converted to liquid and gaseous products. Reaction is highly exothermic; cooling hydrogen is added at different points to limit reaction temperature to about 930°F.

Reacted products enter a "hot catchpot" where heavy oil and solids are removed from the bottom through expansion valves. The heavy oil is freed from unreacted solids by centrifuging or flash distillation with superheated steam and returned to process as pasting oil. Gases and vapors leaving catchpot are cooled to 170°F and condensed.

Condensed products pass to cold catchpot. Gas from top of this catchpot contains about 70% hydrogen. It is washed with water and oil to remove impurities, recompressed and recycled to hydrogen system. Liquid settling in bottom of catchpot and wash-oil scrubber, a synthetic

crude oil, goes through let-down system where pressure is reduced to 7 atm, and is then charged to a still which separates material boiling above 625°F from lighter material. High-boiling material is returned to pasting oil cycle, and lighter material is used as fresh feed to vapor-phase system. Fresh feed from liquid-phase still is mixed with recycle stock and injected into vapor-phase system by steam-driven injector pump operating at 10,000 psi. The oil, after addition of hydrogen passes through heat exchanger, direct-fired radiant preheater and into the top of a single converter. Stream is at approximately 850°F and entirely vaporized by the time it enters converter.

Flow is from top to bottom of converter, through 6 fixed beds of catalyst. In this reactor, the equivalent of 3 former German operations — saturation, splitting and dehydrogenation — is accomplished in one step. Since the reaction



Equipment operating at 10,000 psi is enclosed in concrete stalls

is quite sensitive to temperature, recirculated cooling hydrogen is added at every tray to keep temperature between 912 and 930°F.

After heat-exchange with feed, products from converter are cooled and sent to a cold catchpot where condensed oil and hydrogen are separated. Hydrogen drawn off top is recompressed and recycled. Enriched oils from bottom go through pressure let-down vessels and then to conventional distillation and recovery unit where gasoline and other products are fractionated and treated. Still bottoms are recycled through vapor-phase system.

Hydrogen manufacturing, compression and purification equipment is part of that from an ammonia synthesis plant previously operated for the Army by Hercules Powder Company at this location.

One of the problems in design was the handling of extremely high pressures. Thick-wall tubing, with 2:1 ratio of outside to inside diameters, was especially fabricated and

used. Fittings and valves had to be machined to high precision to avoid possible leaks. Since flanged joints for 10,000-psi working pressure are beyond scope of existing ASA standard, new ones had to be devised.

Throttling valve for reducing pressure of heavy-oil slurry from hot catchpot is new design for severe service. In this valve, the released solid particles strike stellite-lined target at high velocity. The special hard-metal parts, assembled in cartridge, are readily removable.

All high-pressure vessels are within a heavy-walled reinforced concrete structure, 193' long, 28' wide and 58' high, open on top and rear. To minimize danger from possible fires and explosions, structure is divided into 6 stalls by 14" concrete walls. A 130-ton Gantry crane with 70' lift straddles structure and facilitates handling of heavy equipment. Important auxiliaries are low-pressure nitrogen for blanketing coal-preparation equipment, high-pressure nitrogen for purging high-pressure equipment, and high-pressure flushing oil system that keeps lines and equipment free of solidifying heavy oils and settling solids.

In order to use low-alloy steel shells, hot vessels are internally insulated with 3" layer of asbestos cement held in place by stainless-steel liners. This layer keeps shell temperature below 500°F, permitting full utilization of low-temperature properties of the steel, reducing temperature stresses and minimizing hydrogen attack.

#### Paste Preheater Design

One of the most intricate problems was design and fabrication of paste preheater which consists of a 4-cell radiant-type furnace in which the paste is circulated through hairpin tubes hanging from roof. At the pressure and temperature used, the tubes are near the critical point, and temperature slightly above the one required is liable to cause bursting of tubes.

Besides, the paste gels at about 600°F and becomes quite viscous, although it thins out again at temperatures slightly above this. To avoid any plugging difficulties, hot oil and hydrogen are injected at the critical point to raise the paste temperature rapidly.

Accurate control of heating in the unit is made possible by dividing preheater into sections, with optimum heat transfer conditions (dependent on viscosity of paste) in each. Additional protection against overheating is provided by enclosing tubes in chrome-molybdenum steel jacket through which superheated steam is circulated.

Hydrogenation unit is provided with complete instrumentation far beyond usual German practice. When all instruments are working, no operator is needed for control purposes. A number of instruments have been installed that have not been previously used.

Particularly new are: (A) use of bonded strain elements for determining differential pressures. These units were designed for pressure range of 7½ to 1500 lbs differential at 10,000 lbs working pressure. (B) Capillary throttling devices for continuous purging of high-pressure instrument lines (unique for these pressures). (C) Rotating vane-type flow indicator.

Instrument house is constructed of concrete for safety of operators. No high-pressure lines enter building.

#### Liquid soaps and dispensers

Sixteen-page booklet covers line of liquid soaps and soap dispensers. Supplemented by photographs and schematic diagrams, text includes description of consulting service. "Liquid Soaps", issued by West Disinfecting Company, Dept. CP, 42-16 West St., Long Island City 1, N. Y. When inquiring specify CP 2120 on handy form, pages 2 and 3.

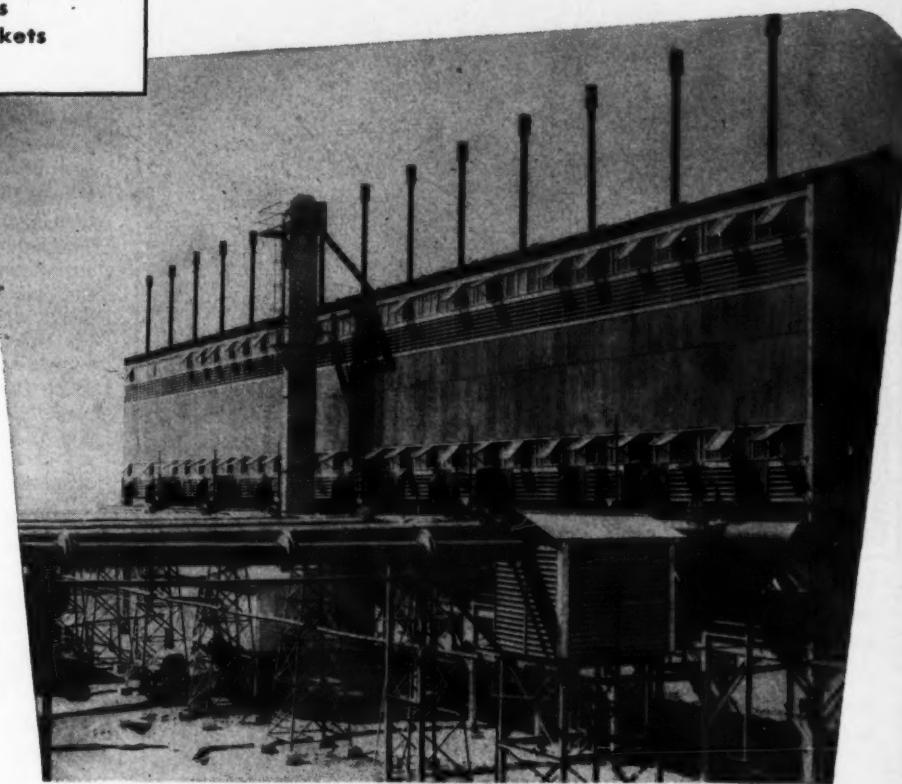
JULY, 1949

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When inquiring check CP 2121 on handy form, pg. 2-3

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## IDEAS

### Catalytic cracking best way to balance gasoline, fuel-oil production . . .

advantage over thermal cracking increases as octane requirements increase

The petroleum industry is confronted with a difficult problem in regard to the over-production of distillate and residual fuels. Statistics show that the supply in storage of these materials is at least 60% greater than it was a year ago. The supply in storage of gasoline is only about 10% higher than a year ago and is not a problem.

Economic studies have been made and are reported herein to evaluate several commercial methods for decreasing the amount of the distillate and residual fuels by converting them into gasoline. The investigation consisted of the preparation of catalytic cracking feed stocks from heavy residual stocks by visbreaking, vacuum-flashing and coking and the catalytic cracking of these stocks.

The recently announced Houdriflow catalytic cracking process was used in the catalytic cracking work. For the purpose of comparison, the thermal visbreaking of the residuum to ultimate gasoline yield was also included.

In these studies the crude charge is 10,000 BPCD of East Texas crude. The crude is distilled to obtain a 250°F.E.P. straight-run gasoline, a 250-400°F. naphtha, a light gas oil for Diesel or No. 2 fuel oil and a 40% vol. residuum. The 250°F.E.P. straight-run gasoline is used in the motor gasoline blend. The 250-400°F. naphtha is thermally reformed to obtain a 70 octane distillate. It is assumed that 1,000 BPCD of gas oil goes directly to sales and the remainder is available as catalytic cracking stock. The C<sub>3</sub> and C<sub>4</sub> fractions from the thermal and catalytic operations are charged to a catalytic polymerization unit. The residuum is processed according to the following schemes:

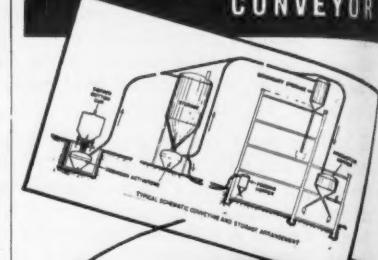
1. Thermal The residuum is cracked to an ultimate yield of motor gasoline, using a conventional two-coil thermal unit.
2. Vacuum-Distillation The residuum is vacuum-distilled to produce an 8.0% vol. asphalt. The vacuum gas oil plus the excess light gas oil are catalytically cracked and the catalytic cycle stock remaining after blending the tar bottoms to No. 6 fuel oil specification is thermally cracked.
3. Visbreaking The residuum is charged to a flash tower and the resulting bottoms is visbroken and returned to the common flash tower. The flash-tower overhead stock plus excess virgin gas oil are catalytically cracked and the catalytic cycle stock remaining after blending the tar bottoms to No. 6 fuel oil specifications is thermally cracked.
4. Coking The residuum is flash-distilled to obtain an overhead fraction, and the resulting bottoms is coked. The combined flash tower overhead and total coker distillate, plus excess light virgin gas oil, are catalytically cracked and the catalytic cycle stock is thermally cracked.

Two additional processing schemes were calculated as alternatives for the visbreaking and coking situations to show the effect of recycle catalytic cracking instead of thermally cracking the cycle stock.

The Houdriflow catalytic cracking process has been described in several recent articles. In general, this process retains the desirable features of the conventional TCC process, and in addition a number of improvements have been made which result in greater flexibility and lower cost. The improvements include a new method for moving catalyst, the use of higher catalyst-to-oil ratios, a simplified kiln and a more compact physical arrangement of the vessels. A summary of the relative advantages of the various proc-

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on handy form, pgs. 2-3

JULY, 1949

### IDEAS

essing schemes when producing a gasoline having an 80 F-2 octane rating is as follows:

Scheme No.*	Investment	Payout Period Yrs.	Earnings \$/CD	No. 6 Fuel Produced	c.c. % On Crude to 80% O.N. Motor
1	\$2,930,000	2.04	3,924	23.78	1.7
2	4,720,000	2.53	5,108	17.81	0.75
3	4,300,000	2.07	5,693	16.23	0.80
4	5,075,000	2.10	6,622	8.26	1.09
3A	4,275,000	1.72	6,800	10.24	0.52
4A	4,950,000	1.83	7,407	2.43	0.68

\*Processing Schemes: 1 — Thermal; 2 — Vacuum Distillation; 3 — Visbreaking; 4 — Coking; 3A — Visbreaking-Recycle Cat. Cracking; 4A — Coking-Recycle Cat. Cracking

The summary indicates that at the present gasoline prices, and provided the refiner has a market for coke, the delayed-coking process is a very attractive method for preparing catalytic cracking feed stocks. Although the coking scheme results in the largest investment, the pay-out time compares very favorably with the other processes, and the earnings per day are appreciably higher. Visbreaking compares favorably with the coking process in that it has a lower investment, slightly lower pay-out time, but produces lower earnings.

Recycle catalytic cracking of the cycle stocks (Schemes 3A and 4A) indicates reduced pay-out times and higher earnings over once-through catalytic cracking followed by thermal cracking of the net cycle stocks after fuel blending. Since coking produces the minimum amount of heavy fuel, the coking scheme is the least affected by the price of fuel. Recycle catalytic cracking minimizes residual fuel when compared to once-through catalytic cracking followed by thermal cracking of the cycle stock.

As the gasoline price increases, with fuel price remaining constant, the advantage of coking, vacuum-flashing and vis-breaking over thermal cracking increases.

As the octane requirements increase, the advantage of catalytic cracking over thermal cracking increases. In addition, the advantage of coking over visbreaking decreases because of the increased lead requirement.

The studies as presented in this paper indicate the following general conclusions:

1. At the present market conditions, coking or visbreaking are the best methods for preparing catalytic cracking stocks.
2. More catalytic cracking capacity appears necessary because of the octane advantage of catalytic over thermal gasolines.
3. To minimize the production of residual fuel, the use of catalytic cracking is advantageous.

(Summarized from paper "Various Refinery Applications of Houdriflow Catalytic Cracking", by G. F. Hornaday, N. D. Nall, C. C. Peavy, W. Weinrich of Houdry Process Corp., Philadelphia, Pa.)

### Reactions, uses and handling of isocyanates

Properties of three isocyanates, now available in pilot plant quantities, are set forth in 12-page technical bulletin. General reactions of isocyanates are given, and comments are provided. Describes revived interest in these compounds, and details many uses. Handling, storage, and toxicity of compounds are discussed. Two analytical methods are described, and extensive bibliography is given.

Tech. Bul. P-125, issued by Monsanto Chemical Co., Dept. CP, 1700 So. Second St., St. Louis 4, Mo. When inquiring specify CP 2135 on handy form, pages 2 and 3.

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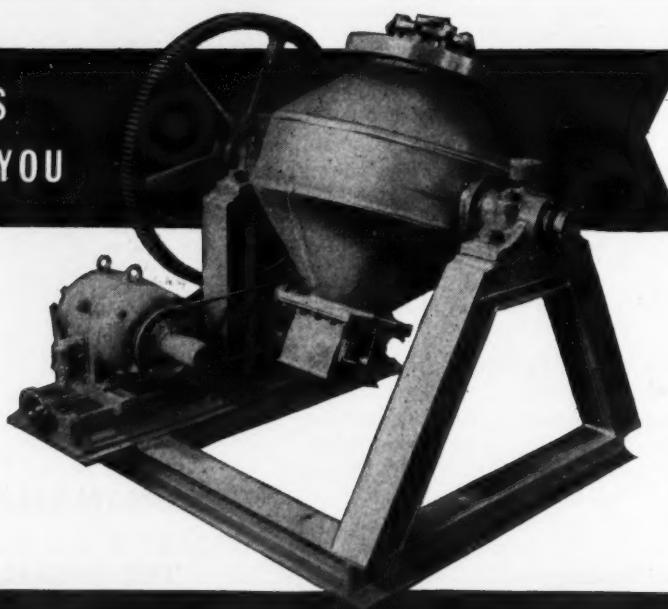
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When inquiring check CP 2138 on handy form, pgs. 2-3

## IDEAS

**Repelling rats, insects, among suggested uses for sodium fluosilicate . . .**

by-product of processing of phosphate rock costs only 4c a lb; now used in laundries

Sodium fluosilicate may prove highly effective in keeping rodents out of paperboard shipping cartons and also as an insect repellent. Although used for mothproofing and as a rinsing aid in commercial laundries, consumption of this chemical is only about 10,000 lbs a year.

Studies showed that rats would not touch food containing this toxic compound, which suggested its possibilities as a rodent repellent.

The material, obtained chiefly as a by-product of processing phosphate rock for fertilizers, phosphate chemicals, and phosphorus, costs only 4c a lb.

Sodium fluosilicate contains the violent element fluorine, but has not been considered a dangerous poison in the past. Before World War I the chemical was used as a food preservative in Europe. Such use is prohibited in this country by the Food and Drug Administration. The compound is less toxic to warm-blooded animals than most of the common economic poisons.

It is extremely toxic to insects and other lower organisms, but its value against insects on plants is slight because it forms acid solutions when mixed with water, causing leaf-burning. The compound has been found to be fatal within 24 hours to the larvae of the Culex mosquito, the type common in the northern United States. Since it can be used in a concentration as low as 1 part to 80,000 parts water, it need not harm livestock.

Tests at Armour Foundation and elsewhere show the chemical to be highly effective in combating dry rot fungi. Insulation board can be thus cheaply treated to prevent attack by microorganisms and insects. It is also expected to prove useful in protecting organic adhesives, industrial starch, textiles, and paperboard cartons. (Summarized from address of Clifford A. Hampel, supervisor of inorganic technology in the ceramics and minerals research division of Armour Research Foundation, before Chicago section of American Chemical Society.)

**Capacitance measurements give  
rate of textile wear . . .**

new method provides close approximation of wear found in actual service

Simple, rapid, and highly sensitive method of measuring abrasive wear of textiles, which renders values more closely approximating actual percent of wear than are obtainable by other methods, has been developed by Dr. H. F. Schiefer, L. E. Crean, and J. F. Krasny of the National Bureau of Standards. Method involves measurement of capacitance of abraded specimen with a precision capacitor, and comparison of that value with the capacitance of an unworn specimen. Resultant value is a percentage statement of textile wear.

In usual procedures, results are not entirely satisfactory, or the methods have limitations. Variations in air permeability, light transmission, or similar properties of the abraded cloth are not necessarily indicative of wear in ordinary fabrics. Measurement of breaking strength is often made, but since the specimen must be destroyed to determine the breaking strength, it is impossible to plot a consistent wear curve with data obtained from a single specimen. Since measurements of capacitance do not alter the

textile under test, a complete set of data may be obtained, showing the rate of abrasion at all times during the life of a single specimen.

Capacitor is of the guard-ring type. High voltage electrode is supported at a fixed distance from a smaller measuring electrode, which is surrounded by a guard ring to prevent straying effects. Construction permits clamping of specimen with the worn area directly between the plates.

Other uses for the capacitance measuring method are in checking uniformity of textiles, for measuring quantitatively the wear of different parts of a garment subjected to a wear test, etc.

Capacitance method is designed for use with improved Schiefer abrading machine. Abrasive wear produced on a variety of materials with this model has been measured by the capacitance method, and found to be extremely uniform over entire abraded area. Results on woven fabrics have been shown to be very similar to those obtained in actual service.

**Minute soil-traces detected with radioactive chemical to test detergents . . .**

method 1000 times more sensitive than those which depend upon physical measurements

An atomic energy by-product, C-14, which emits beta rays, is being used to detect traces of soil beyond the sensitivity of even the most refined of present methods, which depend on physical measurements.

In experiments to evaluate synthetic detergents as metal cleaners, Monsanto Chemical Co. technicians soiled 1" circular pans of sheet steel and stainless steel with a fixed amount of lubricating oil containing a minute quantity of C-14.

The number of electrical charges given off were recorded with a Geiger counter. Pans were then cleaned with 5% of Monsanto Santomerse No. 1, 95% anhydrous sodium metasilicate. The tell-tale charges, before cleaning, were approximately 100,000 a minute. After cleaning, they were as low as 2 counts a minute, indicating that most of the "soil" had been removed.

Removal of 100% was not possible, it was said, because some of the radioactive material became a part of the metal. Methods formerly used for detecting soil, such as gravimetric, degreasing and fluorometric methods often indicated "clean" pans, while the tracer method still revealed presence of dirt. New method is estimated to be a thousand times more sensitive than other methods now used.

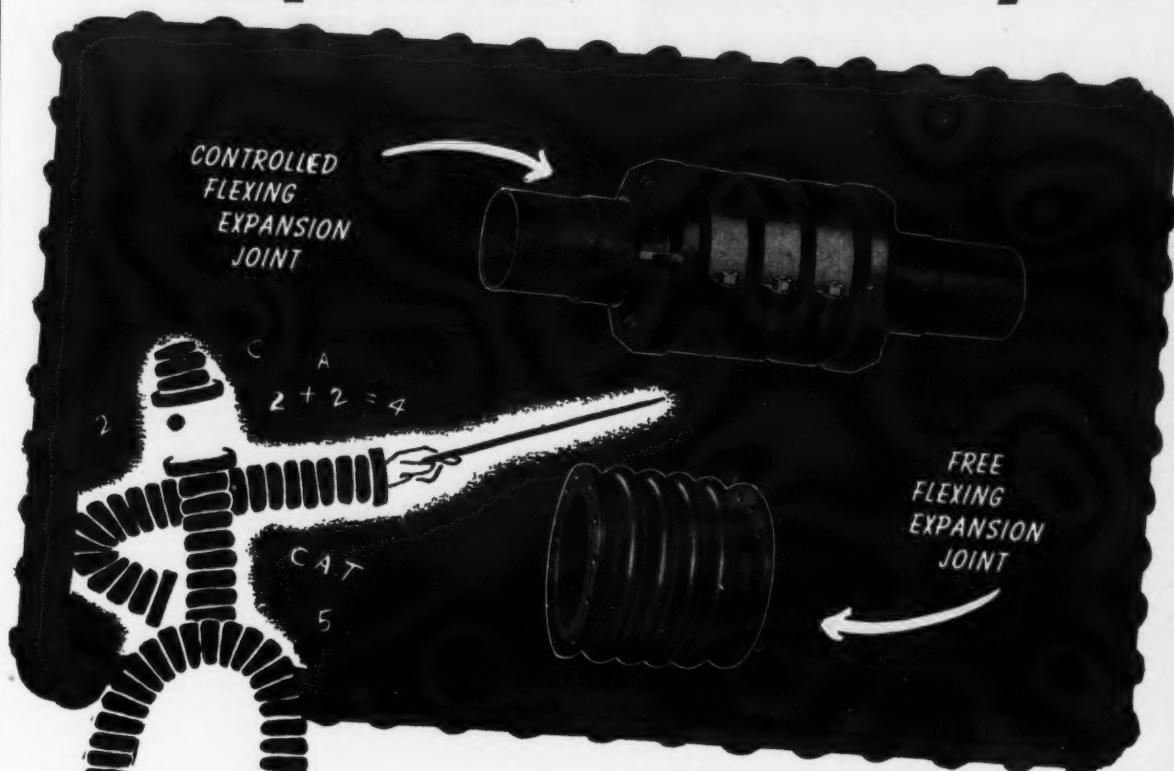
Such sensitivity is particularly important in metal cleaning, where undetected trace amounts of dirt may interfere with proper electroplating or similar operations, and result in later defects.

The tracer compound used in the experiment was N,N-di-n-butyl stearamide especially synthesized for this purpose with C-14. This compound is soluble in SAE 60 oil, the usual soil employed in laboratory evaluation of metal cleaners.

Elaborate cleaning procedure included a 5 minute boil in the detergent solution, 12 dips into hot distilled rinse water, and 1 minute in running tap water. Pans were dried under infrared lamps.

(The method is described in a paper published last May in the ASTM Bulletin. It is the result of 6 months work by J. C. Harris, R. E. Kamp, and W. H. Yanko of Monsanto's Central Research Department at Dayton, Ohio.)

# Let CMH simplify expansion control for you



**CMH FREE-FLEXING EXPANSION JOINTS** for pressures to 30 psi.; temperatures to 1400° F. Sizes to 24" I.D. Flanged or welding ends.

**CMH CONTROLLED-FLEXING EXPANSION JOINTS** with precision mated control rings for pressures to 300 psi.; temperatures to 1400° F. Sizes to 24" I.D. Flanged or welding ends.

**SPECIAL CMH EXPANSION JOINTS** for higher pressures can be furnished. Recommendations will be made on receipt of installation details.

For most installations, expansion joint selection need not be a complicated task. CMH has reduced the expansion joint selection problem to a matter of charts from which the joints necessary to meet your requirements may be selected quickly and easily. For unusual installations CMH offers its "Engineered Application Service" in which competent piping specialists will analyze your problems and make recommendations.

Whether your requirements are "run of the mine" or "one in a million" . . . for a new installation or replacement of obsolete equipment . . . CMH will make it easier for you to get the right expansion joint.

The charts mentioned above plus additional application data are presented in Bulletin EJ-49. Write for copy.

**CMH—ONE dependable source**  
for every flexible metal hose requirement  
• CMH manufactures all standard types of flexible metal hose, both convoluted and corrugated, in a variety of metals; expansion joints for piping systems; stainless steel and brass bellows; various conduits and special assemblies of these components.

**CHICAGO METAL HOSE**  
**CORPORATION**  
**EXPANSION JOINT DIVISION**

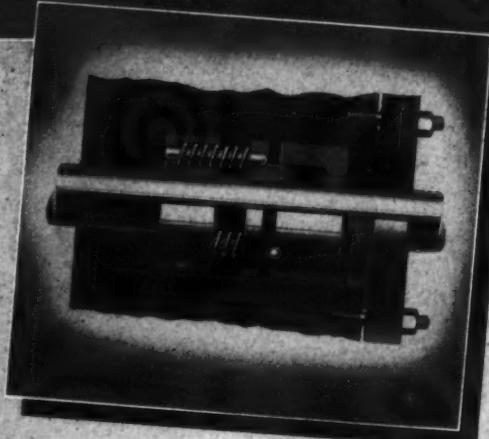
*Leaders in the Science of Flexonics*  
**MAYWOOD, ILLINOIS**  
Plants at Maywood, Elgin and Rock Falls, Illinois  
In Canada: Canadian Metal Hose Co., Ltd., Brampton, Ontario

**FLEXON . . .** identifies CMH products which have served industry for more than 47 years.

When inquiring check CP 2139 on handy form, pgs. 2-3

# DURA SEAL

FOR MEETING THE SEALING REQUIREMENTS OF VOLATILE, CORROSIVE OR ABRASIVE FLUIDS



**DURA SEAL** is a mechanical sealing device designed for sealing processing equipment under conditions not satisfactorily held by conventional packings. Only Dura Seal provides all these features:

- ★ Made to fit standard stuffing boxes
- ★ Rotates with shaft-positive drive
- ★ Resists corrosion
- ★ Unaffected by abrasives
- ★ No scoring of shafts
- ★ Long uninterrupted service
- ★ Reduces fire hazard

WRITE TODAY FOR BULLETIN NUMBER 174CP . . . illustrating Dura Seal applications for better sealing of pumps, mixers, agitators, etc.



**DURAMETALLIC** CORPORATION  
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When inquiring check CP 2140 on handy form, pgs. 2-3

## New Literature

### 85% magnesia insulation protects steam-drums, ducts, piping

Line drawings and photographs illustrate a 96-page manual on 85% magnesia insulation. Available to those directly interested in industrial heat insulation, this literature includes 15 tables.

Subjects covered include properties, determination of correct thicknesses, application and finishing procedures, and insulation maintenance. Appendix contains a discussion of practical applications of heat transmission theory, definitions of technical terms, a glossary of trade terms, and a list of trade names of the insulating material and accessory products.

Copies of the manual are numbered, and numbers registered with the association. Issued by The Magnesia Insulation Manufacturers Association, Dept. CP, 1317 F St., N. W., Washington 4, D. C. When inquiring specify CP 2141 on handy form, pages 2 and 3.

### 40 layouts show varied uses of rotary gas pumps

Many applications for rotary pressure and vacuum pumps are illustrated in 44-page booklet. Forty blueprint-type drawings illustrate connections and layout of such varied uses as testing of valves for leaks, aiding oil-well pumping, extracting liquid from cloth and film, and priming of liquid pumps. Other applications pictured include use with vacuum cooker dehydrator, use as solution agitator, for vacuum packaging, with air motors, etc.

Also illustrates automatic oiling system, 2-stage pumps, and 2-cylinder pumps. Bul. 52445, issued by Leiman Bros., Inc., Dept. CP, 146-181 Christie St., Newark 5, N. J. When inquiring specify CP 2142 on handy form, pages 2 and 3.

### Compact scrubbers remove corrosive fumes from air

Design, construction, and operating principles of line of scrubbers are set forth in 4-page, 2-color bulletin. Schematic drawings and cut-away illustrations demonstrate operation of different types of counter current and cross flow models, depict Berl Saddle bed and v-weir distributor. Mist eliminators may be incorporated in any model to remove entrained scrubbing liquid. Shells, grids, distributors may be supplied in steel, concrete, masonry, Permanite, Knightware, graphite, etc. Saddles are available in Knightware, Permanite, or porcelain.

Low pressure drop, turbulent gas flow, wide range of capacities, and compactness are cited as advantages. Scrub-

bers may be employed to suppress oil mists, to remove dusts from gases, as well as for conventional fume washing. "Fume Washers for Corrosive Service", issued by Maurice A. Knight Co., Dept. CP, Kelly Ave., Akron 6, O. When inquiring specify CP 2143 on handy form, pages 2 and 3.

### Properties and specifications of 22 organo-silicons

Series of single-page 2-color data sheets carries information on properties, specifications, and reactivity of 22 organo-silicon products. Includes boiling point, specific gravity, refractive index, flash point, fire point, weight, and solubility data on each of the compounds. Notes detail performance of chemicals on contact with water and air, give precautions for handling, and describe appearance.

"Organic-silicon Chemicals", issued by Dow Corning Corp., Dept. CP, Midland, Mich. When inquiring specify CP 2144 on handy form, pages 2 and 3.



Applying cement over 85% magnesia block insulation on body of large valve

### Carbon, graphite ground-anodes cut pipe-line deterioration

New catalog section covers carbon and graphite ground anodes, describes their use in transferring galvanic attack from pipe, and other underground and underwater structures, to the anodes themselves. Methods of using anodes for electrical grounding of tanks, signal systems, etc., are detailed. Backfill materials, which furnish increased anode surface and lengthen life of anodes, are discussed.

Tables are included to aid determining most suitable type, size, and number of anodes, and quantity of backfill, for individual applications. Cat. Sec., M-8500A, issued by National Carbon Co., Inc., Dept. CP, 30 E. 42nd St., New York 17, N. Y. When inquiring specify CP 2145 on handy form, pages 2 and 3.

### Glass fibers impart strength, stability to plastics

Twelve-page, 2-color bulletin discusses plastics reinforcement with glass fiber materials. Describes and specifies many cloths, yarns, mats, and strands. Points out properties which each type lends to plastics, and sets forth details of treatments given to glass for use with different plastics. Tables contain specifications and engineering data. Fully illustrated.

"Plastics Reinforcement", issued by Owens-Corning Fiberglas Corp., Dept. CP, 16 E. 56th St., New York 22, N. Y. When inquiring specify CP 2146 on handy form, pages 2 and 3.

### Nitriding of alloy steel produces extremely hard case

Detailed directions for nitriding and finishing of special alloy steels are given in 8-page, 2-color bulletin. Charts illustrate properties of alloys after different treatments; pictures demonstrate uses.

Stress relieving and machining of steels before processing, precautions in regard to grinding and machining after processing, and availability of the alloys are covered. Case produced by nitriding with ammonia is reported to be of a hardness of from 900-1200 Vickers Diamond

Brinell 10 Kg. load. High core strength and comparative freedom from distortion are among other features. "Nitrally", issued by Joseph T. Ryerson, & Son, Inc., Dept. CP, Box 8000-A, Chicago 80, Ill. When inquiring specify CP 2147 on handy form, pages 2 and 3.

#### Covers new laboratory stirrers, weights, penetration needles

Four-page bulletin describes 6 new laboratory instruments. New motor stirrers are pictured, described as eliminating slipping by replacing cone clutch with worm gear train. Rheostat makes fine speed adjustments. Stainless steel, high-vacuum insulation containers of many sizes are listed and specified.

Glass thermometers designed to prevent rolling, stainless steel gram weight sets, all-stainless, hardened, A. S. T. M. penetration needles, and shouldering rings are other items pictured and described.

"6 New Laboratory Instruments", issued by The Emil Greiner Co., Dept. CP, 20-26 N. Moore St., New York 13, N. Y. When inquiring specify CP 2148 on handy form, pages 2 and 3.

#### "Patent Law" revised edition reflects new court decisions

Second edition (Feb. '49) of "Patent Law" is revised to include many recent court decisions. These are arranged to emphasize various phases of invention. Chapter on "Uses" is rewritten, and that on "Disclaimer" redrafted. "Products of Nature" has been added.

"Damages" and "Trade Secrets" are expanded. Discussion of "Double Patenting" is restated. 268 pages. Cloth-bound, size approx. 6 x 9". Author, C. H. Biesterfeld. Remit \$4 direct to John Wiley & Sons, Inc., Dept. CP, 440 Fourth Ave., New York 16, N. Y. Or, when inquiring, specify CP 2149 on handy form, pages 2 and 3.

#### Counters, monitors, detectors measure radioactivity

Range of instruments for measuring radioactivity are detailed in 36-page, 2-color bulletin. Devices include scaling units for use in counting with radiation detectors, decade scalers, counting systems for differentiating between alpha and beta emission and evaluating desired component, monitors for measuring emission rates, detector units, and accessories such as sample pans and standardized radium sources. Pictures and specifications complement the text.

Cat. J, issued by Nuclear Instrument and Chemical Corp., Dept. CP, 223-233 W. Erie St., Chicago 10, Ill. When inquiring specify CP 2150 on handy form, pages 2 and 3.

#### Latest Celanese specifications contained in handy brochure

Latest series of Celanese Specifications bulletins are contained in illustrated 28-page brochure, paperbound in handy size for filing. Practical data on Celanese chemicals currently in volume production cover USP formaldehyde, acetone, methanol, glacial acetic acid, n-Propanol, acetaldehyde, tricresyl phosphate, methylal and propionaldehyde. Similar bulletins will be added to the series as new chemicals become available. "Celanese Chemicals," issued by Celanese Corporation of America, Chemical Div., Dept. CP, 180 Madison Ave., New York, N. Y. When inquiring specify CP 2151 on handy form, pages 2 and 3.



The photo directly above shows an elevator where grain is unloaded, stored, cleaned and re-loaded with the help of numerous Kirk & Blum systems.

Kirk & Blum Dust Collection and Fume Control Systems are widely used in chemical, food, drug and allied fields. Here too, the "invisible" tool CLEAN AIR, has proved invaluable in efficient manufacturing and processing.

For example, two views in grain handling and milling are shown. In this industry, adequate dust collection is a *must*, since the dust presents both health and safety hazards besides contributing to general inefficiency.

Significant then, that many of the leading plants in this industry have selected and re-ordered Kirk & Blum systems. If you have a dust or fume problem, call on Kirk & Blum for efficient analysis and prompt, no-obligation recommendations. The Kirk & Blum Mfg. Co., 2833 Spring Grove Ave., Cincinnati 25, Ohio.

FOR CLEAN AIR . . . THE [REDACTED] TOOL

**KIRK AND BLUM**  
DUST AND FUME CONTROL SYSTEMS

When inquiring check CP 2152 on handy form, pgs. 2-3

**SAFEGUARD VITAL  
PROCESSING OPERATIONS  
WITH *Kathabar*  
HUMIDITY CONTROL**

*Check*

If you are doing these or similar processing operations you should know how the Kathabar System of Humidity Control has stabilized production, reduced operating costs, and provided quality control never before possible in industry. Ask a Kathabar Humidity Engineer to tell you all the facts.

**A PARTIAL LIST OF KATHABAR APPLICATIONS**

**CHEMICAL**

Photographic Film Processing and Storage  
Match Drying  
Stencil Drying  
Sensitized Paper Mfr.  
Drug & Pharmaceutical Mfr.  
Gelatin Capsule Processing  
Glue Drying - Shellac Drying  
Chemical Processing  
Processing of Sodium  
Vitamin Mfr.  
Gunpowder Processing  
Processing Plastics  
Rocket Powder Processing

**MANUFACTURING**

General - Ceramic Drying  
Storage of Highly Finished Metal Parts  
(Corrosion Prevention)  
Compressed Air Drying  
Covered Cable Drying

**METALS INDUSTRY**

Powdered Metals Processing  
Cupola Dry Blast (Foundry)  
Safety Glass Manufacturing  
Magnesium Castings  
Production  
Aluminizing Process

**FOOD**

Drying of Icings - Bakery  
Candy Making - Fish Drying  
Bean Sprout Cultivation  
Vegetable Dehydration  
Processing Powdered Coffee  
Cranberry Dehydration  
Milk Drying  
Spaghetti Mfr.

**LEATHER**

Shoe Drying

**PRINTING AND PAPER**

Cellophane Printing  
Color Lithography & Printing  
Paper Making

**TEXTILE**

Rayon Storage  
Nylon Hosiery Knitting

**MISCELLANEOUS**

Metal Testing  
Rubber Testing Laboratory  
University Laboratory

**LABORATORIES & TEST ROOMS**

Paper Testing  
Metals Laboratory  
Rubber Testing Laboratory  
University Laboratory

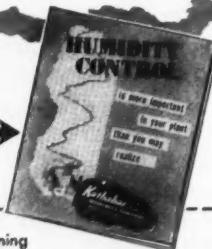
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Auditoriums  
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Use Kathabar Humidity Conditioning to prevent frost on low temperature coils.

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When inquiring check CP 2153 on handy form, pgs. 2-3

**NEW LITERATURE**

**Tells properties, characteristics  
of 27% chromium-iron**

Properties and characteristics of 27% chromium-iron are comprehensively presented in a 30-page bulletin. Illustrated with photographs, tables and graphs. Describes properties at elevated temperatures, impact properties and notch sensitivity, structural characteristics, embrittlement phenomena, working and fabricating, heat treating.

Bul. TR-506, issued by The Babcock & Wilcox Tube Company, Dept. CP, 85 Liberty St., New York 6, N. Y. . . . or for more information check CP 2154 on handy form, pages 2 and 3.

**Sensitive hydraulic cells weigh  
Items up to 2500 tons**

Hydraulic cells, sensitive to weights as low as 1 millionth of full capacity, are depicted and described in 8-page, 2-color bulletin. Diagrams and pictures accompany description of ram principle. Low deflection and high natural frequency are among advantages listed. Installation photos show some of wide range of compression, tension, and torsion testers and scales. Navy scale with capacity of 2500 tons is described. Tables give dimensions, weights, and capacities.

Principle of operation of sensitive null-type indicator is given, with descriptive schematic drawing. Bul. 288, issued by The Baldwin Locomotive Works, Dept. CP, Philadelphia 42, Pa. When inquiring specify CP 2155 on handy form, pages 2 and 3.

**Discusses advantages and uses  
of flame-hardening techniques**

Interesting 2-page leaflet discusses techniques of flame hardening, advantages and applications of the process, and lists references for further information. Cites possibility of localized hardening without affecting core properties, and notes that gradual merging of hardened metal with ductile core minimizes spalling. Spot, progressive, and spinning methods of flame hardening are covered, and recommendations for stress-relief are given.

Apr. 1, 1949 issue of "Tempil" Topics, published by Tempil Corp., Dept. CP, 132 W. 22nd St., New York 11, N. Y. When inquiring specify CP 2156 on handy form, pages 2 and 3.

**Rubber work gloves have  
knit elastic lining . . .**

14" long, are coated with non-slip neoprene

Uses: To protect hands.

Description: Furnished in sizes 10 and 11, of elastic, knit-lined neoprene with non-slip finish. Fingers are straight. Over-all length, including gauntlet, is 14".

Source: Made by The Pioneer Rubber Co., Dept. CP, 1939 Tiffin Rd., Willard, O. . . . or for more information check CP 2157 on handy form, pages 2 and 3.

**Bureau of Standards' methods  
of producing optical glass**

Circular discusses processes and operations employed by the National Bureau of Standards in producing optical glass. Twenty pages describe properties of the glasses produced, the construction and use of melting pots, the

**You write  
FEWER CHECKS  
for  
MAINTENANCE**



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WESTERN - Engineered

**HEAT  
TRANSFER  
EQUIPMENT**

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Close attention to each minute detail of your specifications by Western's engineering and fabricating personnel mean longer life, lower maintenance cost on heat transfer equipment.

Western's reputation for efficiency of design and manufacture is rapidly spreading throughout America's process industries. Let your heat transfer problems be ours.

Write for our fully illustrated booklet—"Men, Machinery, Materials."

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**SUPPLY COMPANY**

**428 N. BOULDER**

**TULSA, OKLAHOMA**

When inquiring check CP 2158 on handy form, pgs. 2-3

# Cambridge WOVEN WIRE BELTS MOVE



A Cambridge Drive Chain Belt gives fast, economical and safe handling of slab rubber through vulcanizing and cutting.

Combining motion and processing, Cambridge Woven Wire Conveyor Belts offer these solutions to materials handling problems.

Fast continuous production—improved, more uniform products—work area savings—reduced accidents from manual handling—PLUS reduced handling costs by freeing manual labor for other jobs. Cambridge belts can be fabricated from any metal or alloy—to the mesh or weave that suits your requirements best.

FREE BOOK! "Woven Wire Conveyor Belts for Industrial Applications," 56 pages, illustrated. Describes Cambridge Belt construction and use. Write today for your free copy... or call the Cambridge office nearest you.

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When inquiring check CP 2159  
on handy form, pgs. 2-3

JULY, 1949

## NEW LITERATURE

composition of batch materials, and precautions to be observed. Melting schedules, molding procedures, annealing methods, inspection procedures, and preparation of rough blanks are thoroughly detailed.

Many charts, curves, and tables amplify the text. Illustrations demonstrate plant practices. NBS Circular 469, "Optical Glass at the National Bureau of Standards". Remit \$1.15 direct to Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.

### Inhibit corrosion with chromate and bichromate

Thorough discussion of the use of chromate and bichromate materials in the inhibition of corrosion is contained in 16-page paper. Details dual corrosion treatment afforded by hexavalent chromate ions: solutions are rendered less corrosive, and protective films are formed on exposed surfaces. Composition of these films is investigated, and advice is given on when to use chromate salts and when to use bichromate salts.

Problems resulting from exposure of dissimilar metals to corrosives are covered, and solutions suggested. Notes that efficiency of chromate inhibitors is not impaired by aeration. Discusses use of chromates in inhibitive paints. Toxic effects are detailed, and handling precautions and first aid procedures are set forth.

"Corrosion Inhibition with Chromate", issued by Mutual Chemical Company of America, Dept. CP, 270 Madison Ave., New York 16, N. Y. When inquiring specify CP 2160 on handy form, pages 2 and 3.

### Cool, fast grinding of any steel with new diamond wheels

Diamond grinding wheels are covered in 36-page bulletin. Specially developed resin bond is reported to cut cool and fast at all times. Even if wheel accidentally touches soft steel while cutting carbide-tipped tools, wheel will not load or glaze, it is stated.

Includes details of types, sizes, and prices. "Resinoid Bonded Diamond Wheels", issued by Diamond Wheel Dept., Manhattan Rubber Div., Raybestos-Manhattan, Inc., Dept. CP, Passaic, N. J. When inquiring specify CP 2161 on handy form, pages 2 and 3.

### Many types and capacities of mobile elevators, cranes

Many sizes and varieties of mobile elevators and cranes are profusely illustrated, with complete information and specifications, in a 36-page booklet, printed in 2 colors. Contents include hand-operated elevators of 500 to 5000-lb capacities, with lift capacities up to 36'; electric-operated units for 500 to 5000-lb loads; hand and electrically-operated telescopic types.

Also barrel and drum elevators, including tilting models; pallet, 4-post, platform-loading, balcony and revolving-base elevators; mobile cranes with fixed or revolving bases and electrically-operated hoists. A special 2-color insert shows 3 of latest standard-model mobile elevators for a wide range of requirements. Features such as cable-safety device, thermal overload and slack-cable switches, grooved cable drum, etc., are fully described and illustrated.

Bul. 10482, issued by Barrett-Cravens Company, Dept. CP, 4609 S. Western Blvd., Chicago 9, Ill. . . . or for more information check CP 2162 on handy form, pages 2 and 3.

Is yours a problem of  
**SIZE  
REDUCTION?**

**G**RANULATING, pulverizing, defibrizing, crushing, or cutting—whatever you call it, if it's size reduction, Sprout-Waldron can help you.

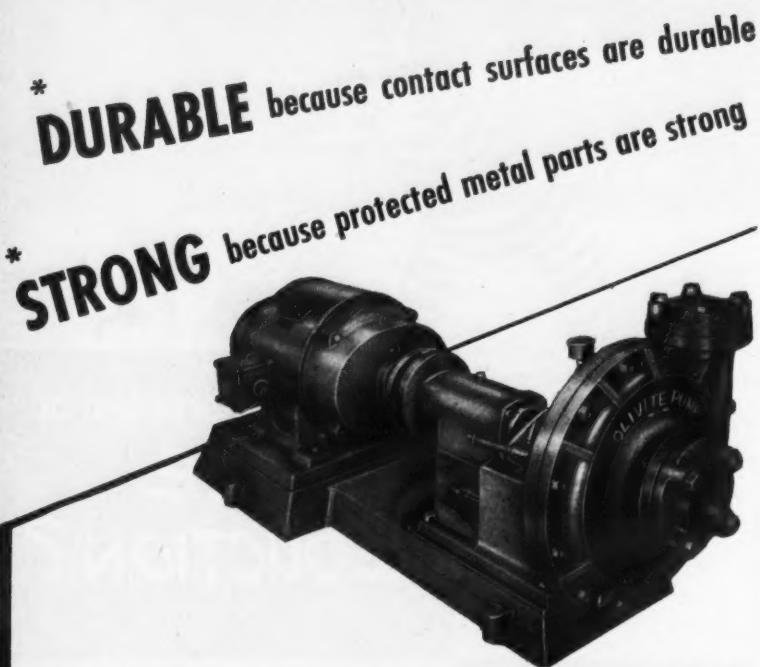
Water softening granules from ion exchange resins . . . a cottony fluff from sheet pulp . . . moulding stock from continuous sheet thermoplastics — these are typical applications in which Sprout-Waldron experience and equipment have been outstanding.

Every day S-W Engineers are transforming new and varied size reduction problems into more profitable operations. Whether your processing calls for the usual or the unusual approach, first learn what Sprout-Waldron can do for you!

Outline your size reduction problem today! Contact Sprout, Waldron & Co., 10 Waldron St., Muncy, Pa.

When inquiring check CP 2163 on handy form, pgs. 2-3

# OLIVITE acid-handling pump



The test of durability in a pump built to handle hot as well as cold solutions centers on the durability of the contact surfaces.

\*Every inch of the casing, cover and impeller of the Olivite Acid-Handling Pump that comes in contact with the solutions being handled is either OLIVITE, a highly resistant natural rubber compound or OLIVEX, a resin plastic. The shaft is fully protected. Selected packing, held properly in place by a floating stuffing box, completes the sealing in of the chemicals within a housing of great durability.

The test of strength centers on the strength of the parts independent of any corrosion-resisting factors.

Where OLIVITE is used, all protected parts are castings of the highest grade grey iron. Where OLIVEX is used, the part involved is made solid of this material. OLIVEX has exceptionally high tensile strength.

Bulletin No. 308-R gives further details of these two important features. It also tells all about the wide range of service performed by this pump.

## OLIVER UNITED FILTERS INC.

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Western Sales Division  
Oakland 1, California  
2900 Glascott Street

When inquiring check CP 2164 on handy form, pgs. 2-3

## NEW LITERATURE

### Use non-sparking barrel-hooks, other tools in critical areas

Line of safety tools are depicted and discussed in 32-page bulletin. Available in special bronze, beryllium-copper, or Monel, non-sparking tools are cited as approved by Factory Mutual Laboratories for reducing hazards in areas where flammable or explosive materials demand caution. Discusses superior hardness of alloys, especially beryllium-copper alloy, used in wrenches, chisels, knives and other tools which must maintain a cutting or gripping edge.

Cat. 119, issued by Ampco Metal, Inc., Dept. CP, 1745 So. 38th St., Milwaukee 4, Wis. When inquiring specify CP 2165 on handy form, pages 2 and 3.

### Operating data, flow sheets on wet grinding mills

Thorough discussion of wet grinding mills, supplemented by operating data and flow diagrams, is contained in 16-page bulletin. Construction of conical ball mills and pebble mills is described and illustrated; function of conical shape in graduating grinding media from large to small sizes along path of feed is explained. Many installation photographs demonstrate uses.

Types of feeding mechanisms, construction of liners, and methods of classifying ground effluent are detailed. Tables give sizes, weights, speeds, and hp requirements of all standard mills. Convex-head, cylindrical ball and pebble mills are also covered. Charts show grinding characteristics of grate discharge and high pulp level mill operation.

Dryers, feeders, thickeners, and other accessories are also depicted and discussed. "Wet Grinding Mills", issued by Hardinge Company, Inc., Dept. CP, 240 Arch St., York, Pa. When inquiring specify CP 2166 on handy form, pages 2 and 3.

### Untrained personnel can operate automatic battery charger

Motor-generator battery chargers are covered in 4-page, 2-color bulletin. Compact, self-contained units have simple controls and wiring; pictures demonstrate ease of operation. Tells how charging current is controlled throughout charging time, and how set shuts off when battery is fully charged. Time for complete recharging is given as 8 to 9 hours for lead batteries, 7 hours for Edison batteries. Tables give ratings, dimensions, weights, and motor hp of different models. Photographs and line drawings illustrate construction.

Bul. 234, issued by The Electric Products Co., Dept. CP, 1725 Clarkstone Rd., Cleveland 12, O. When inquiring specify CP 2167 on handy form, pages 2 and 3.

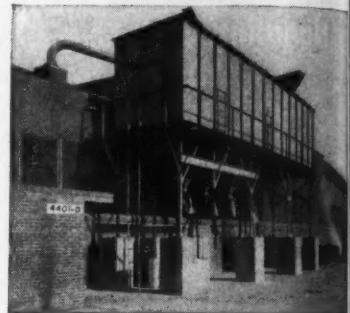
### Resin coating resists alkalies, acids, alcohols, waxes, oils

Uses, properties, and characteristics of special resin coating are given in interesting "proof packet", which includes folder for filing, 4-page, 2-color bulletin, and 5 inserted sheets. Cited as providing exceptionally long-lasting protection against acids, alkalies, alcohols, oils, waxes, and strong cleaning compounds, many illustrated case histories give details of applications where coating has outlasted ordinary paints and coatings.

Inserts contain data on corrosion tests conducted by other companies, further case histories, and a protection analysis

# SLY

Pioneers and Leaders  
in INDUSTRIAL  
DUST CONTROL



This Filter ventilates Blast Rooms and Cabinets in an aircraft engine overhaul shop. Exhaust fan is located in fan house on end of dust filter.

### SIMPLE, EFFECTIVE SHAKER MECHANISM KEEPS FILTERS AT TOP EFFICIENCY

Sly Dust Filters collect dust by filtration of the dust-laden air through cloth—they get all the dust.

They collect the dust on the outside of flattened cloth tubes (bags)—visible and easily accessible for inspection and maintenance.

To maintain collecting efficiency, the dust must be periodically shaken from the bags. The effectiveness of the Sly Shaker Mechanism is one of the outstanding advantages of the Sly Dust Filter. It operates year after year with little, if any, maintenance and keeps the collector at top efficiency.

It will pay you to look into the many advantages of Sly Dust Filters. Ask for Bulletin 98.

A complete line including small "Unit" Filters for smaller operations.

### THE W. W. SLY MANUFACTURING CO.

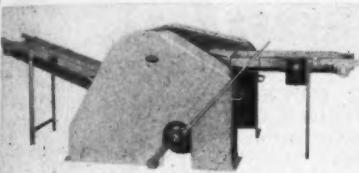
1754 Train Avenue • Cleveland 2, Ohio  
New York • Chicago • St. Louis • Philadelphia  
Detroit • Minneapolis • Birmingham • Cincinnati  
Los Angeles • Rochester • Toronto

When inquiring check CP 2168 on handy form, pgs. 2-3

## HE SAVED

**\$3,912**

A YEAR ON POWER COSTS ALONE BY SWITCHING TO TAYLOR-STILES CUTTERS



No. 618 cutter

A rubber manufacturer had to reduce rubber sheets from a mill into particles of uniform size, without fines or oversize particles.

He had a choice between a hammer mill requiring a 150 horsepower motor, plus a screw recirculating system, and two Taylor-Stiles #618 cutters set in tandem, requiring one 10 horsepower motor for each machine, to do the entire stock reduction job in a single operation.

Aside from the much lower initial cost of installing the Taylor-Stiles Cutters and the faster production of more uniform particles, there was a power saving of \$2.64½ an hour; \$19.56 in an 8-hour day; \$3,912 in a 200-day year!

Another case proving it's  
**"CHEAPER TO CUT THAN TO GRIND."**

Let us show you how cutting will lower cost of your stock reduction.

**TAYLOR-STILES & CO.**

Specialists in industrial cutting  
since 1863

20 BRIDGE ST., RIEGELSVILLE, N. J.

When inquiring check CP 2169 on handy form, pgs. 2-3

## NEW LITERATURE

sheet, which provides space for description of protection problems, and permits subsequent estimate of costs. "Prufcoat Proof Packet", issued by Prufcoat Laboratories, Inc., Dept. CP, 63 Main St., Cambridge 47, Mass. When inquiring specify CP 2170 on handy form, pages 2 and 3.

### Floatless liquid level controls for conductive liquids

Floatless liquid level controls, employing unique induction relay, are pictured, diagrammed, and explained in 32-page catalog. Applicable for pump-up or pump-down uses, controls operate on any liquid which will conduct electricity.

Multiple pump controls, electrodes and electrode holders, magnetic contactors and starters, ice-freeing-attachments, and application diagrams are detailed.

Cat. 1048, issued by B/W Controller Corp., Dept. CP, Birmingham, Mich. When inquiring specify CP 2171 on handy form, pages 2 and 3.

### One electrode welds stainless, clad, cast, spring, alloy steels

All purpose steel-welding electrode is discussed at length in 6-page, 2-color bulletin. Coated with special flux, electrodes are described as bonding with less heat, without digging in, and without distorting welded parts. Tables give physical properties, current settings, and heat exposure data. Case histories cite applications where multi-purpose electrodes filled salvaging and repair requirements where other types of electrodes were not suitable.

"The Eutectic Welder," Feb., 1949, issued by Eutectic Welding Alloys Corp., Dept. CP, 40 Worth St., New York 13, N. Y. When inquiring specify CP 2172 on handy form, pages 2 and 3.

### Magnetic motor controls protect against overload, under-voltage

Line of magnetic motor controls, designed to provide full protection against overload and under-voltage on a.c. motors up to 50 hp, is pictured, described, and specified in 22-page looseleaf brochure. Circuit breakers, reversing and non-reversing starters, reversing and non-reversing contactors, relay heaters, etc., are fully detailed. Many tables give dimensions, ratings, and designations. Pictures and cut-away drawings illustrate each model.

Bul. TEB-8, issued by The Trumbull Electric Mfg. Co., Dept. CP, Plainville, Conn. When inquiring specify CP 2173 on handy form, pages 2 and 3.

### Precise determination of carbon in extremely low percentages

New gasometric system, designed to permit precise determinations of carbon percentages as low as .0005%, is depicted and described in 2-page brochure. System is also cited as performing determinations of higher percentages with previously unobtainable precision. States that determinations are completed in 3 to 6 minutes. Instrument features temperature compensator buret, semi-automatic balancing of solutions, and fast draining, finely calibrated burets.

"Precision Carbon Determinator", issued by Laboratory Equipment Corp., Dept. CP, St. Joseph, Mich. When inquiring, specify CP 2174 on handy form, pages 2 and 3.

1... No Linkage to the Diaphragm

2... Actuation by Air Pressure or Vacuum

The Oliver Diaphragm Slurry Pump is a true diaphragm pump—the diaphragm being an unpunched circular disc of natural or synthetic rubber. It is held in place when the upper and lower sections of the pump body are bolted together. It is flexed solely by air pressure or vacuum.

In addition to this absence of mechanical linkage, there are other "no" advantages: no motor, no stuffing box, no packing, no high speed moving parts, no delicate adjustments.

And the O.D.S. Pump is quite versatile, already handling many different kinds of slurries and pulpy solutions. Capacities range from 5 to 60 gpm (water rate) depending upon the size.

If you are interested in knowing more about this low maintenance, efficient slurry pump, ask for Bulletin 309.

**OLIVER UNITED FILTERS INC.**

New York 18, N. Y.

33 West 42nd Street

San Francisco 11

California

Chicago 1, Illinois

221 N. LaSalle Street

Western Sales Division

Oakland 1, California

2900 Glascow Street

Sales & Manufacturing Representative:

E. Long Limited

Orillia, Canada

Factories: Oakland, Cal.-Hasleton, Pa.-Orillia, Canada-Melbourne, Australia

When inquiring check CP 2175 on handy form, pgs. 2-3

# Never Before - So Much Sifting So Fast - In So Little Space

In the space of only 4.75 sq. ft., this #1 Abbé Turbo Sifter will screen up to 1,000 lbs. of material per hour, effectively and cleanly, separating "fines" up to 300 mesh from the "tailings". And it will do it in less time, with less power than other mechanical sifting equipment. The #0 Sifter handles up to 300 lbs./hr. in 2 1/4 sq. ft., and the large #2 Sifter separates more than 5,000 lbs./hr. in a floor space of only 2 ft. x 2 1/2 ft.

Reports on the remarkable performance of the Abbé Turbo Sifter show exceptional output with savings of as much as 80 per cent in time and labor.

Employing the centrifugal separation principle, this Sifter eliminates shaking, vibration, air separation, loss or contamination. It is quiet and dustproof.

The Abbé Turbo Sifter costs little to install and operate, as proved in many hundreds of plants. Let Catalog 65 tell you why.



## Abbé Turbo Sifter

ABBÉ ENGINEERING CO.

Grinding Mills • Mixers • Sifters

46 Church St. New York 7, N. Y.

When inquiring check CP 2176 on handy form, pgs. 2-3

## TELL US YOUR TROUBLES!

AND IF THEY PERTAIN TO  
DRYING or DEHYDRATING

WE CAN HELP YOU



A large percentage of Lanly oven installations have resulted from our close co-operation with progressive concerns who entrusted production problems to us and are today profiting from Lanly knowledge and experience.

Consult us without obligation regarding immediate or contemplated needs. Literature is available.

**THE LANLY CO.**  
OVENS FOR INDUSTRY  
HEATED BY: GAS, OIL, ELECTRICITY, STEAM  
or WASTE HEAT

757 PROSPECT AVENUE  
CLEVELAND • OHIO

DRYING OVENS  
Batch or Continuous  
For Drying CHEMICALS, PHARMACEUTICALS,  
RUBBER, CERAMICS, PAINT & MOLDS

LABORATORY OVENS  
Many Standard Sizes & Arrangements  
CUSTOM INSTALLATIONS TO YOUR  
REQUIREMENTS

When inquiring check CP 2177 on handy form, pgs. 2-3

## NEW LITERATURE

### Use turbine agitators on open or closed tanks

Turbine agitators, which can be used on open or closed tanks, as top or bottom entering units, with direct or v-belt drives, are detailed in new bulletin. States that agitators are shipped as complete units. Pictures and text give details of new drive which isolates shaft flexures from motor gears.

"Turbine Agitators", issued by Mixing Equipment Co., Inc., Dept. CP, 1024 Garson Ave., Rochester 9, N. Y. When inquiring specify CP 2178 on handy form, pages 2 and 3.

### 76-hp tractor shovel has 4-wheel drive

Large action-views of a 76-hp tractor shovel with 1 1/2 cu. yd. bucket are displayed in "broadside" form which opens to 22 x 32" size. These include digging, loading, grading and carrying uses.

Positive action of 4-wheel pneumatic-tire traction despite sand, mud and rough terrain is pointed out. "Four Wheel Drive is Here," issued by The Frank G. Hough Co., Dept. CP, 820 Sunnyside Ave., Libertyville, Ill. When inquiring specify CP 2179 on handy form, pages 2 and 3.

### Catalog of processing is 12 pages

Agitators of all kinds, absorbers, autoclaves, blenders, condensers, cutters, crystallizers, digesters, dissolvers, drives, driers, extruders, heat exchangers, kettles, mixers, reactors, stills and valves are shown and described in a 12-page brochure.

Complete process units, process plants and special process equipment are included. "Process Plants and Equipment," issued by Industrial Process Engineers, Dept. CP, 8 Lister Ave., Newark, N. J. When inquiring specify CP 2180 on handy form, pages 2 and 3.

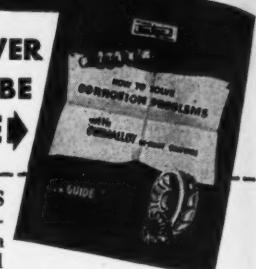
### Cast steel valves for high temp. service

New catalog contains complete information on cast steel valve designs with pressure-seal bonnets for high temperature and high pressure applications. Includes details of design, material specifications, pressure-temperature ratings, and charts for correlation of valve size and pressure drop.

Pictures illustrate globe, angle, non-return, and check valves. Cat. Sec. 12-H, issued by Edward Valves, Inc.,

## CORROSION PROBLEM?

YOUR ANSWER  
MAY BE  
HERE



### FREE BOOK GIVES

FACTS. Send for this folder on Chemalloy corrosion resistant castings. You'll find it a handy guide to the quick selection of the right alloy for the job. 176 specific corrosive media are listed with suggested alloy grades for each. It gives you the answers to corrosion problems quickly. Included also is complete information on Chemalloy—the corrosion resistant alloy. Send today for your free copy. Address: Electro-Alloys Div., 1926 Taylor St., Elyria, Ohio.

Thermalloy for Heat and Abrasion Resistance...  
Chemalloy for Corrosion Resistance...

AMERICAN  
**Brake Shoe**  
COMPANY

ELECTRO-ALLOYS DIVISION

When inquiring check CP 2181 on handy form, pgs. 2-3

## Uniform Separation

FOOD PRODUCTS — CHEMICALS — METALLICS  
NON-METALLIC MINERALS

The new model GAYCO Centrifugal air separator makes possible the uniform and increased recovery of fine material within a range of 40 to 400 mesh.

- Greater Capacity
- Cleaner Trallings
- 99% Through 325 Mesh
- 25% to 30% greater recovery of fines
- Not affected by variation in speed or rate of feed

### TIMKEN BEARING EQUIPPED

The Gayco Separator  
Handles

### SUCH PRODUCTS AS

BAGASSE	GROUND HAIR
CASEIN	GROUND OATS
COCOA POWDER	GUM ARABIC
COTTONSEED	SOY FLOUR
MEAL	SPICES
FERTILIZER	SUGAR



## Universal Road Machinery Co.

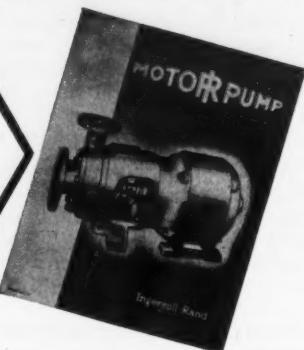
RUBERT M. GAY DIVISION 117 Liberty St. New York 6, N. Y.  
Canadian Representative: F. H. Hopkins & Co., Ltd., Montreal  
FACTORY & LABORATORY, KINGSTON, N. Y.

When inquiring check CP 2182 on handy form, pgs. 2-3

CHEMICAL PROCESSING Preview

## For Better PUMP PERFORMANCE . . .

start  
looking  
HERE



Here's the help you need in selecting the proper pump to improve liquid handling throughout your plant. You'll find complete information on Ingersoll-Rand MOTORPUMPS ranging in size from  $\frac{1}{2}$  to 50 h.p.; 5 to 1800 g.p.m.; 5 to 600 ft. head. Find out why these ruggedly built, compactly designed units will do your job better. Ask our nearest branch office for a copy of the MOTORPUMP CATALOG.

### Ingersoll-Rand

11 Broadway, New York 4, N. Y.

308-9

When inquiring check CP 2183 on handy form, pgs. 2-3

**Is this the solution to  
your lubrication problems, too?**

FOR more than 20 years, Farval has been saving money for users. Through efficient, dependable lubrication of machines and industrial equipment of all kinds, Farval saves 4 ways: It saves oiling labor, it saves lubricant, it reduces bearing expense, it eliminates down time.

The Farval System is a positive mechanical method of delivering oil or grease under pressure to a group of bearings from one Central Station, in exact quantities, as often as desired. It consists of a central pumping unit, two main supply lines and a measuring valve for each bearing.

Catalog No. 25 and "Case Studies" give you the facts and figures. The Farval Corporation, 3257 East 80th Street, Cleveland 4, Ohio.

Write for these  
FREE bulletins



For personalized service:  
Write or phone, John E. Millikan,  
Overland exchange—VU 1-6600.

When inquiring check CP 2184 on handy form, pgs. 2-3

JULY, 1949

### NEW LITERATURE

Dept. CP, 1234 W. 145th St., East Chicago, Ind. When inquiring specify CP 2185 on handy form, pages 2 and 3.

#### Handy reference tables on wing nuts

Four-page, 2-color bulletin contains dimension charts and tables of sizes of two types of wing nuts. Describes corrosion-resistant qualities, recessed-wing finger grip, and smooth, wide boss at base.

Also pictured and discussed are many small zinc die castings and small thermoplastic injection moldings. Describes facilities for producing tiny parts. "Wing Nuts", issued by Gries Reproducer Corp., Dept. CP, 780 E. 133rd St., New York 54, N. Y. When inquiring specify CP 2186 on handy form, pages 2 and 3.

#### Single and multi-stage blowers, exhausters

Construction, capacities, and general specifications of line of blowers and exhausters are set forth in 4-page, 2-color bulletin. Available in steel or heavy duty cast iron, blowers and exhausters feature self-aligning bearings, close tolerances for quiet, efficient operation, and simple construction. Pictures, cut-away diagrams illustrate various models.

Fourteen different discharge positions are pictured. Bul. B-5-A, issued by Lamson Corp., Allen Billmyre Div., Dept. CP, 303 Lamson St., Syracuse 1, N. Y. When inquiring specify CP 2187 on handy form, pages 2 and 3.

#### Low-voltage switchgear has drawout circuit breakers

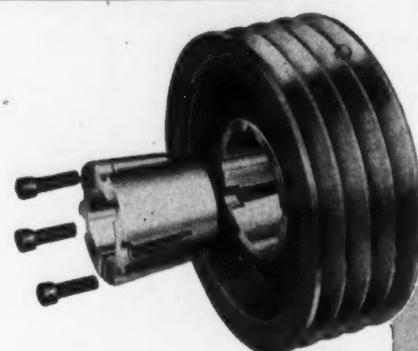
Metal-enclosed low-voltage switchgear and drawout air circuit breakers are topics of an 8-page, illustrated bulletin. Photographs illustrate rigid, self-supporting structure of switchgear's framework, its pantograph construction which provides simple but effective arrangement for withdrawing circuit breaker units.

Switchgear dimensions and typical panel data are charted. Units are available in 15 to 5000-amp current ratings, interrupting ratings to 100,000 amps, 250 volts DC and 600 volts AC. Weatherproof, fully-enclosed housings for outdoor use are also available. Bul. 18B6376A, printed in highly-legible black-on-yellow, is file-size and punched for ring-binding. Issued by Allis-Chalmers Mfg. Co., Dept. CP, 1151 S. 70th St., Milwaukee, Wis. When inquiring specify CP 2188 on handy form, pages 2 and 3.

The simplest,  
surest mechanism ever  
devised for holding  
wheels to shafts

No flange—no collar.  
Easy on, easy off.  
Slip it on and tighten  
while sighting

Stocked in complete  
range of sizes in  
Dual Duty (A and B),  
B, C and D grooves



Holds fast to the  
shaft with firmness  
equivalent to a  
shrunk-on fit

#### A Great, Time-Saving Development—

# TAPER-LOCK

Trade Mark

## V-BELT<sup>®</sup> SHEAVE

This is one of the century's biggest developments in power transmission equipment—another Dodge "first." Simpler, tighter-fitting, truer-running, infinitely easier to handle. Saves installation time and results in neater applications—in the plant or on your product.

Dodge's sole business is to "get the power through"—smoothly, steadily, economically. To succeed in this business Dodge has developed many products that are outstanding in the field of mechanical power transmission. Your Transmissioneer, the local Dodge Distributor, is equipped to give you valuable information on new and better ways to transmit power.

DODGE MANUFACTURING CORPORATION • MISHAWAKA, IND.

OTHER DODGE  
"FIRSTS"



Taper-Lock Flexible  
Coupling. Ready to  
install; no reborning.



Dodge-Timken Bearing.  
4 basic types in a  
vast range of sizes.



Rolling Grip Clutch.  
No toggles! Flexible  
and positive.

**DODGE**  
of Mishawaka, Ind.

CALL THE TRANSMISSIONEER. Look for the name of the Transmissioneer,  
your local Dodge distributor, under "Power Transmission Equipment" in your  
classified telephone directory.

FOR YOUR NAME PLATE REQUIREMENTS, WRITE OUR  
SUBSIDIARY, ETCHING COMPANY OF AMERICA,  
1820 MONTANA STREET, CHICAGO 14, ILLINOIS

When inquiring check CP 2189 on handy form, pgs. 2-3

## BUFLOVAK-DOPP PROCESSING KETTLES

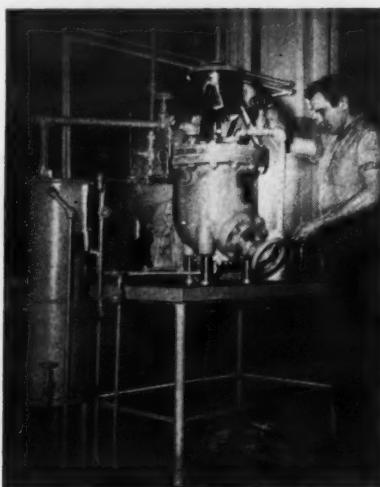
### Efficiently Serve Many Industries

YOUR product can be processed in this Dopp Kettle that is installed in the BUFLOVAK Research and Testing Laboratory.

Larger equipment is also available.

Results are positive because they are conducted on a pilot plant scale.

Write for particulars.



BUFLOVAK EQUIPMENT DIVISION  
of BLAW-KNOX COMPANY  
1645 Fillmore Ave. Buffalo 11, N. Y.

When inquiring check CP 2190 on handy form, pgs. 2-3

BUFLOVAK-DOPP Processing Kettles are used for thorough mixing of a wide range of chemical and food products.

Performance records show considerable savings in steam, power and operating time.

Exclusive features in design and construction assure uniform mixing, heating and cooling. The result is a better, more uniform product, produced at lower cost!

Complete details upon request.

### NEW LITERATURE

#### Punch, cut, weld, fold, press or bead plastic sheet, strips

Six-page, 3-color folder shows line of plastic fabricating machines, illustrates typical products. Folding, drawing, pressing, welding, cutting, and beading of plastic sheet and strip material is pictured. Line drawings demonstrate transformation of material as operations progress from blank stock to finished product. Capacities and dimensions of machines are given.

"Plastic Fabricating Machines", issued by Taber Instrument Corp., Plastic Machine Div., Dept. CP, 111 Goundry St., North Tonawanda, N. Y. When inquiring specify CP 2192 on handy form, pages 2 and 3.

#### Discusses effective, insoluble anti-foam agent

Silicone anti-foam agent, which disperses widely in aqueous phases of colloidal systems, alcohols, aromatic and aliphatic solvents, etc., is described in 4-page, 2-color bulletin. Completely insoluble in aqueous phases, water, and the lower alcohols, the agent permits continuous heating during distillation, condensation, polymerization, esterification, etc. Reports that such small amounts are required to kill foam, that risk of contamination of products is negligible.

Photographs, charts, and table illustrate properties of agent. Many applications are noted. Bul. B-5, issued by Dow Corning Corp., Dept. CP, Midland, Mich. When inquiring specify CP 2193 on handy form, pages 2 and 3.

#### Compares performances of alloys in 179 corrosives

Two tables give general uses, compositions, and comparative performances of many alloys. First table gives 179 different corrosive media, under different, specified conditions of concentration and temperature, and charts the resistance to attack each of 17 alloys have to each corrosive condition. Second table lists these and other alloys, and gives their compositions, mechanical properties, and most suitable applications. Six-page, 2-color bulletin also includes photos which demonstrate uses of different alloys.

Bul. T-171, issued by Electro-Alloys Div. of American Brake Shoe Co., Dept. CP, Elyria, O. When inquiring, specify CP 2194 on handy form, pages 2 and 3.

#### Chemically inert thermoplastic is amenable to heat treating

Three technical bulletins detail particulars of trifluorochloroethylene polymer. Unaffected by concentrated boiling acids, strong caustics, fuming nitric acid and other powerful oxidizing agents, it is described as resistant to organic solvents, but is swelled slightly by highly halogenated materials. First of three bulletins gives physical and mechanical properties in 4 pages. Cites resistance to permanent deformation, high electrical resistance and good dielectric properties, and resistance to wetting by water.

May be made transparent, translucent, or opaque. Reports that plastic may be produced in various forms, ranging from soft and resilient to hard and crystalline, by means of conventional heat treatments.

Second bulletin discusses general principles of modification with heat treatment. Third bulletin sets forth operating data and general instructions for compression, transfer, and injection molding, and for extrusion.

**BUILDERS' Conveyoflo**

Control, weigh, and feed coal in one simple operation with Builders' Conveyoflo. This "meter for dry materials" fits right into present conveyor lines, either inclined or horizontal, and is the modern way to handle coal from pulverizers to storage. Its unique pneumatic operating mechanism provides high accuracy (within  $\pm \frac{1}{2}$  of 1%), space-saving compactness, plus long-term dependability. For complete information and Bulletin E4-550, address Builders-Providence, Inc., (Division of Builders Iron Foundry), Providence 1, R. I.

**BUILDERS PRODUCTS**  
Flow Meters and Controllers . . . Mechanical and Differential . . . for Liquids, Steam, Air and Dry Materials.

**BUILDERS PROVIDENCE**  
Instruments

When inquiring check CP 2191 on handy form, pgs. 2-3

- Accurate - within  $\pm \frac{1}{2}$  of 1% of actual weight for most of its range.
- Compact - no overhead framework. Minimum floor space required.
- Durable - no knife edges or fragile mechanisms. Conveyoflo is 100% pneumatically operated.
- Two Basic Designs - available as self-contained unit or for installation in present conveyors.
- Inclined or horizontal - Conveyoflo operates with equal efficiency on the level or inclined.
- Uninterrupted Flow - Conveyoflo weighs, records, or controls flow right in present lines - avoids costly interruption of flow.

## NEW LITERATURE

Tech. Buls. 1-1-49, 2-1-49, and 3-1-49, issued by The M. W. Kellogg Co., Dept. CP, P.O. Box 469, Jersey City 3, N. J. When inquiring specify CP 2195 on handy form, pages 2 and 3.

### Now packing wets itself; has short equilibrium-time

Thin metal strips, perforated with over 1000 holes per sq. in., are described, in four page bulletin, as being highly efficient packing. Photos show metal strips shaped into half cylinders, with corners and edges bent in to prevent stacking. Tables give performance data, reveal that height equivalent to theoretical plate does not increase appreciably with height of packing bed. It is reported that tiny holes, and burrs on surfaces of protrusions, form such an excellent capillary surface that no preflooding of tower is required, thus permitting establishment of equilibrium in relatively short time.

Installation involves only funneling into tower. Other tables list holdup and liquid velocities, prices, pressure drop at different heights, etc.

Bul. 8, issued by Scientific Development Co., Dept. CP, Box 795, State College, Pa. When inquiring specify CP 2196 on handy form, pages 2 and 3.

### Chemical market report is monthly service

Comprehensive monthly reports on the chemical market, either concerning the entire list of 85 major chemicals and most of the unusual ones, or data on any specified chemicals, are now available. Compiled from more than 100 publications and government bulletins, complete reports are 225 to 250 typewritten pages.

Pages on a specific chemical are \$2 per full page or \$24 per year, whichever is less. An unusual chemical, for example, may total only a few cumulative pages per year, while the entire list is furnished each month at an annual cost of \$1200. Past and present accumulated data on one or more chemicals, at \$2 per page, are also available.

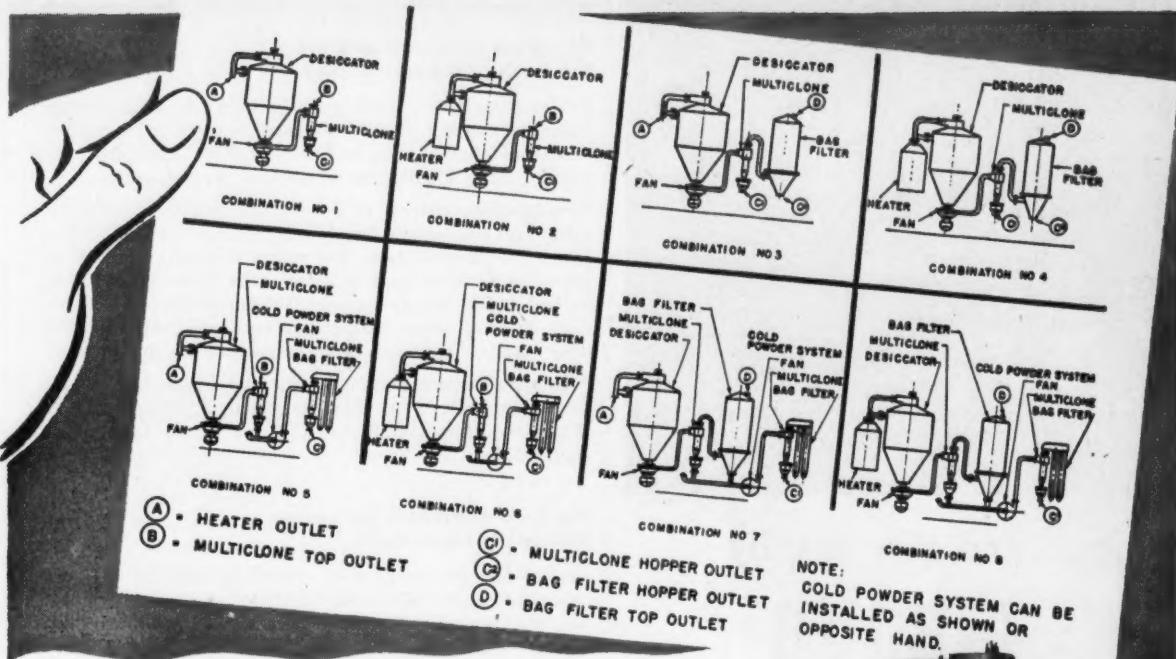
Chemical Market Report, issued by Foster D. Snell, Inc., Dept. CP, 29 W. 15th St., New York 11, N. Y. When inquiring specify CP 2197 on handy form, pages 2 and 3.

### Benzene, toluene, benzoic acid labeled with isotopic carbon

Twelve-page publication contains several articles relating to isotopic chemicals and to radioactivity analysis. New procedure for synthesis of benzene, toluene, and benzoic acid, labeled in the ring with radioactive carbon-14, is outlined. Amorphous carbon and carbon-14 tagged sodium bicarbonate are stated to be now available from stock.

Lengthy article on performance characteristics of Geiger tubes explains reasons for maintaining operating voltages 150 volts above threshold potentials, points out reasons for limited life of self-quenching tubes, and discusses uses of different counter types, maintenance of proper sample-to-background counting rate, and appearance of drifting threshold potentials.

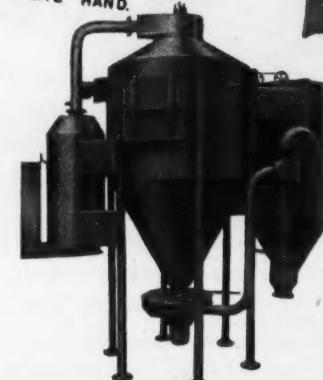
Chart plots useful life of isotopic bromine. Information on courses offered at Oak Ridge Institute is included. "Tracerlog", April, 1949 issue, published by Tracerlab, Inc., Dept. CP, General Motors Bldg., 1775 Broadway, N. Y. When inquiring specify CP 2198 on handy form, pages 2 and 3.



## This may be the key to YOUR SPRAY DRYER PROBLEM

This helpful chart shows the wide versatility of  
TURBULAIRES "Type N" Spray Dryer equipment

SEND FOR YOUR COPY



### SOME OF THE MANY COMPANIES WHO HAVE PURCHASED THE TURBULAIRES "TYPE N"

Sharp and Dohme, Inc.  
U. S. Department of Agriculture (New Orleans)  
U. S. Department of Agriculture (Pearl River)  
General Mills, Inc.  
Horlick's Malted Milk Corporation  
Reichhold Chemicals, Inc.  
Harshaw Chemical Company  
Corn Products Refining Company  
American Cyanamid Company  
Standard Brands, Incorporated  
Armour & Co.  
Louisiana State University  
Anheuser-Busch, Inc.

California Milk Products Company  
Frederick Stearns & Co.  
Abbott Laboratories  
The Glidden Company  
Mead Johnson & Co.  
Washington University, St. Louis, Mo.  
Parke Davis & Company  
General Foods Corporation  
Instituto de Pesquisas Tecnológicas, São Paulo, Brazil  
Lever Brothers  
Hercules Powder Co.  
Bakelite Corporation

**WESTERN  
Precipitation  
CORPORATION**

ENGINEERS, DESIGNERS & MANUFACTURERS OF EQUIPMENT FOR  
COLLECTION OF SUSPENDED MATERIALS FROM GASES & LIQUIDS

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PRECIPITATION CO. OF CANADA, LTD., DOMINION SQ. BLDG., MONTREAL



While the supply lasts we will gladly send you a copy of the above equipment sketches, together with a copy of this booklet describing the TURBULAIRES "Type N" in detail. Write today!

When inquiring check CP 2199 on handy form, pgs. 2-3



## ...and they specify **LABOUR**

Creosote tar acid oil, heated to 550° F., is handled at a 60-foot head by the two LaLabour pumps at the right in the above picture. The other two LaLabour pumps are moving carbolic acid at 250° F.

LaLabour pumps won these jobs because of the user's experience with other LaLabour pumps; they provide maximum assurance against process interruptions due to untimely pump failure. Extreme simplicity of LaLabour design eliminates trouble-breeding complications. Thorough-going care in building—checked step by step with elaborate tests including actual operation under specified head and capacity conditions before shipment—reduces the possibility of service difficulties to the vanishing point.

That's why those who realize what they're up against in handling difficult process problems take no chances. They know they need LaBours . . . and they specify LaLabour.



**THE LABOUR COMPANY, Inc.**  
Elkhart, Indiana, U.S.A.

When inquiring check CP 2200 on handy form, pgs. 2-3

Page 72

### NEW LITERATURE

#### **Glassless infra-red heaters for curing, baking, drying**

Folder contains 4-page, 2-color bulletin and 9 single-page inserts, discussing glassless infra-red heaters. Dimensions, details of construction, and flexibility of application are pointed out. Charts give weight and watt densities.

Case histories set forth in insert pages give operating information on applications involving molding of kapok, drying plastic powders without hot spots, removing static from paper as it comes from calender rolls, flowing of sealing asphalt inside storage batteries, maintaining preheated Mi-carta strips at proper temperature until punched, and many other uses. Suggested heater arrangements are pictured.

"Glassless Radiant Heaters", issued by Edwin L. Wiegand Co., Dept. CP, 7500 Thomas Blvd., Pittsburgh 8, Pa. When inquiring specify CP 2201 on handy form, pages 2 and 3.

#### **Markets analyzed, processes designed, supervised**

Leaflet describes activities of consulting chemical engineers and economists. Specialists in chemical process engineering, their activities are listed as including preliminary economic evaluations, plant and process designing, selection of plant location, and supervision of plant construction and of initial process operation. Cites advantages of integrated plan made possible by use of one experienced group for all consultation.

Lists personnel, their qualifications, and a partial list of fields which the active experience of the group covers. "Chemical Process Engineering", issued by R. S. Aries & Assoc., Dept. CP, 26 Court St., Brooklyn 2, N. Y. When inquiring specify CP 2202 on handy form, pages 2 and 3.

#### **Basic information on applying finishes to aluminum**

Instructions and basic information on processes for applying surface finishes to aluminum, as well as on characteristics of the finishes, is included in interesting, 124-page book. Processes adapted to continuous production operations are separated from those only partially suitable for mass production techniques.

Subjects covered include cleaning treatments, mechanical finishes, chemical treatments, electrolytic oxide finishes, electroplated finishes, special purpose finishes, and organic finishes. Includes 26 tables which give typical operating data on all processes, compare corrosion resistances of aluminum alloys, provide data on compositions, temper designations, typical mechanical properties, etc.

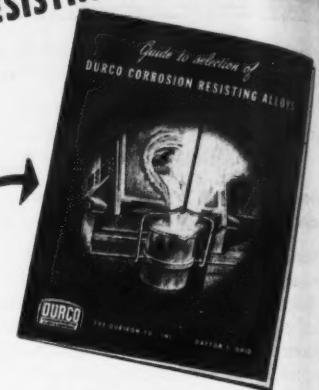
Profusely illustrated with photos showing uses and demonstrating processes. "Finishes for Aluminum", issued by Reynolds Metals Co., may be obtained by writing direct to manufacturer, Dept. CP, 2500 So. 3rd St., Louisville 1, Ky.

#### **beta-Methyl Umbelliferone useful as ultra-violet screening agent**

Important industrial uses, physical and chemical properties of the highly fluorescent compound, beta-Methyl Umbelliferone, are described in a 27-page technical bulletin. A derivative of coumarin or 1, 2-benzo-pyrone, it is said to undergo chemical reactions typical of both the phenolic nucleus and the lactone linkage. Chemical reactions include many common to both resorcinol and esters.

Useful for synthesis of unusual derivatives not readily pre-

**If you buy  
CORROSION-RESISTING EQUIPMENT  
you should  
have this  
helpful  
BULLETIN**



Listing 155 corrosives, it shows which of five well-known DURCO alloys offers most satisfactory resistance to each. Where two or more alloys are satisfactory, the most economical alloy possessing the required mechanical properties can be selected.

If you buy pumps, valves, pipe, heat exchangers, steam jets, and other corrosive-handling equipment, you will find this guide an invaluable aid.

Write today for your free copy  
of bulletin 100-A



**THE DURIRON CO., INC.**  
DAYTON 1, OHIO

Branch Offices in Principal Cities

When inquiring check CP 2203 on handy form, pgs. 2-3

## **"SNAP-IN" LINERS... Longer Life for Metal Containers**



#### **QUICKLY, EASILY APPLIED . . .**

"SNAP-IN" LINERS are readily dropped into place and securely held there by snapping the lid over the container rim. Lid (rubber lined) is then fastened down with adjustable fasteners, forming a leakproof, rubber-to-rubber seal. Liner can be quickly removed at any time.

Contact Our Nearest Branch for Further Details and Prices.



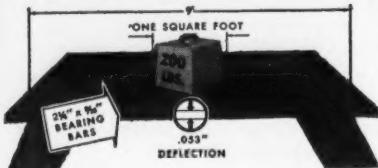
#### **GOODALL RUBBER COMPANY**

GENERAL OFFICES, MILLS and EXPORT DIVISION, TRENTON, N. J.  
Branches: Philadelphia • New York • Boston • Pittsburgh • Chicago • St. Paul • Los Angeles  
San Francisco • Seattle • Salt Lake City • Denver • Houston • Distributors in Other Principal Cities

When inquiring check CP 2204 on handy form, pgs. 2-3

CHEMICAL PROCESSING Preview

For **STRENGTH** specify  
**TRI-LOK**  
 RECTANGULAR  
**OPEN STEEL FLOORING**



The locked-in strength of Tri-Lok enables it to stand up under heavy loads—even on long spans. No rivets, bolts, or welds are used in the construction of Tri-Lok; this feature eliminates the possibility of loose joints.

Tri-Lok is also available in Diagonal, or Super-Safety U-type Flooring, and in Stair Treads of all types. Write for Bulletin KO 1140.

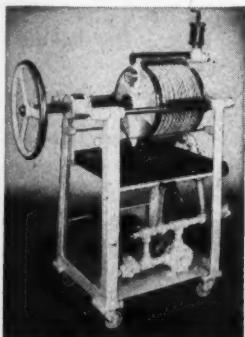
**DAIRO CORPORATION**

National Distributor for the  
 Tri-Lok Company

Dravo Building • Pittsburgh 22, Pa.  
 Sales Representatives in Principal Cities



When inquiring check CP 2205 on handy form, pgs. 2-3



**ERTEL ASBESTOS DISK FILTERS**  
 built to solve filtration problems in many fields

**FEATURE SINGLE HANDWHEEL FOR EFFICIENT EFFORTLESS CLOSURE.**

★ Ertel EW Model Filter, illustrated, has capacities from 5 to 20 gallons per minute. It will accommodate from six to sixty 12 1/4 inch Ertel Asbestos Filter Disks. Can be had with or without electric motor and pump.

**ERTEL FREE LABORATORY SERVICE:** Send a sample of your product to us for laboratory test. We will filter it and return for your inspection along with enough recognized Ertel Asbestos Filter Sheets to prove the superior results in your plant.



**ERTEL ENGINEERING CORPORATION**  
 KINGSTON  
 NEW YORK

New York City Sales:

40 West 48th Street, N. Y. 19, N. Y.

ASBESTOS FILTER SHEETS • ASBESTOS SHEET FILTERS  
 CYLINDER TYPE DISC FILTERS • PYROGEN FILTERS  
 VACUUM BOTTLE FILLERS • PUMPS • MIXERS • CAPPERS

When inquiring check CP 2206 on handy form, pgs. 2-3

JULY, 1949

**NEW LITERATURE**

pared from other starting materials, the compound serves as a whitening agent or "optical bleach" for soap and soap products and as a screening agent for elimination of ultra-violet rays. Its blue fluorescence suggests use as a masking agent in materials having a slightly yellow cast.

46 references to pertinent technical and patent literature, also data and graphs showing ultra-violet and infrared absorption spectra, and fluorescence spectra of the compound, are included. Technical Bul. C-9-111, issued by Koppers Company, Inc., Chemical Div., Dept. CP, Pittsburgh 19, Pa. When inquiring specify CP 2207 on handy form, pages 2 and 3.

**Government specifications for mineral wool insulation**

Eight-page pamphlet carries government specifications for mineral wool insulation for heated surfaces. Offered as an aid to all who specify insulation, the intent of the pamphlet is to facilitate standardization of specifications. Mineral wool blankets, felts, and industrial batts are classified by three temperature limit ranges: up to 500°F, up to 1000°F, and up to 1200°F. Requirements are set for non-fibrous content, corrosiveness, moisture adsorption, temperature resistance, fire resistance and thermal conductivity.

Densities and construction details of the three forms are also specified. Form HH-I-563, available from Industrial Mineral Wool Institute, Dept. CP, 441 Lexington Ave., New York 17, N. Y. When inquiring specify CP 2208 on handy form, pages 2 and 3.

**Hard-facing wire resists corrosion, abrasion**

Seven-page looseleaf folder carries thorough discussion of hard-facing wire. Wire consists of powdered metal, extruded with plastic binder, which is applied to metal surfaces by means of standard metallizing guns. Plastic is described as volatilizing during spraying process. Cited as possessing a hardness of 56 to 61 Rockwell C, very high corrosion, abrasion, and impact resistance, the wire is supplied in 1/8" and 3/16" diam. Non-magnetic, non-sparking, and has high red hardness.

Folder gives complete instructions on surface preparation, application with gun, and fusing the overlay to the base metal. Cooling and finishing techniques are also recommended.

"Sprayweld Wire", issued by Wall Colmonoy Corp., Dept. CP, 19345 John R St., Detroit 3, Mich. When inquiring specify CP 2209 on handy form, pages 2 and 3.

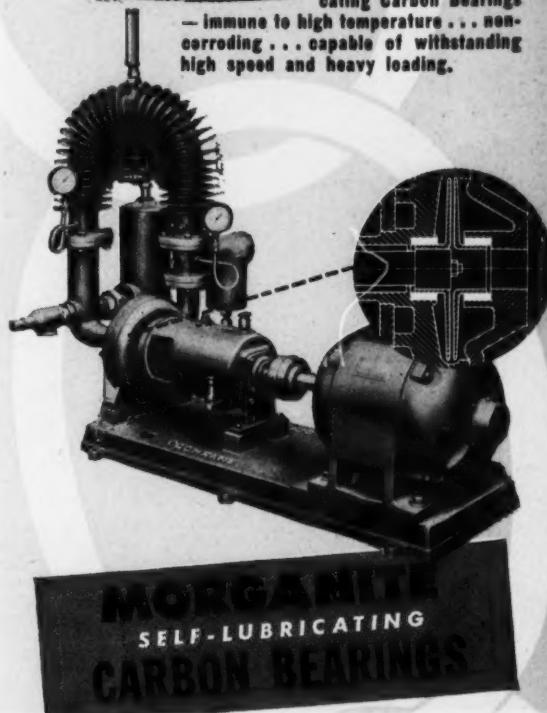
**Notes and bibliography on uses of radioactive materials**

Extensive annotated bibliography, and discussion of uses and techniques possible with radioactive materials, are contained in 16-page booklet. Introduction describes factors which have influenced adoption of radioactive techniques, details methods and results which may be obtained, and cites general unfamiliarity with the field as hindering more rapid utilization of radioactive materials. Selective bibliography includes background references, survey articles, and references dealing with specific fields.

"Industrial Uses of Radioactive Materials", issued by Arthur D. Little, Inc., Dept. CP, 30 Memorial Drive, Cambridge 42, Mass. When inquiring specify CP 2210 on handy form, pages 2 and 3.

**PROBLEM:** To supply bearings for high speed pump handling steam condensate at over 300°F, 300 PSI . . . to function without conventional lubrication . . . requiring no maintenance.

**SOLUTION:** Morganite Self-Lubricating Carbon Bearings — immune to high temperature . . . non-corroding . . . capable of withstanding high speed and heavy loading.



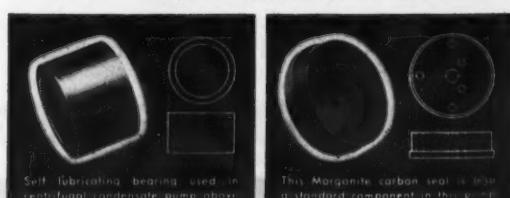
The fact that Morganite carbon bearings are standard equipment in this well-known condensate return pump is conclusive proof of performance in severe service. In this and many other applications, Morganite self-lubricating bearings, seals and rings have repeatedly demonstrated their ability to effect important economies by eliminating lubrication problems, reducing maintenance and permitting placement of bearings, seals, etc., in inaccessible locations.



SEE OUR CATALOG IN  
 SWEET'S FILE  
 A PRODUCT INDEX

FOR DETAILS consult the Morganite Catalog in Sweets File for Product Designers; for engineering counsel or specific proposals, call in a Morganite sales engineer. There is no obligation.

REGISTERED  
 TRADE MARK  
**Morganite**  
 INCORPORATED  
 LONG ISLAND CITY 1, NEW YORK



Manufacturers of Morganite Carbon Brushes for all motor and generator applications, and Morganite Carbon Piles

When inquiring check CP 2211 on handy form, pgs. 2-3

Page 73

# It takes NINE to make a line-up...



Whether you need a full line-up of nine tanks, or just a single tank, our fabricating shops and field crews are prepared to build and erect them for you. Horton tanks will mean dependable and easily maintained storage facilities for your plant. The nine flat-bottom units shown above are just a few of the tanks built for a chemical plant at Houston, Texas.

Other types of steel plate work which we build for the chemical processing industries include spherical, spheroidal, and cylindrical pressure tanks, elevated water tanks, and special structures with corrosion-resistant linings. Ask our nearest office for estimating figures covering tanks and steel plate work to meet your requirements.

## CHICAGO BRIDGE & IRON COMPANY

Atlanta 3.....2107 Healey Bldg. Birmingham 1.....1553 North Fiftieth St.  
8 stories 10.1007-201 Devenshire St. Houston 2.....2151 National Standard Bldg.  
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Cleveland 26.1535 Lafayette Bldg. Detroit 26.1507 Henry Bldg.  
Seattle 1.....1307 Hunt Bldg. Tulsa 3.....1649 Hunt Bldg.  
Plants at BIRMINGHAM, CHICAGO, SALT LAKE CITY, and GREENVILLE, PA.

When inquiring check CP 2212 on handy form, pgs. 2-3

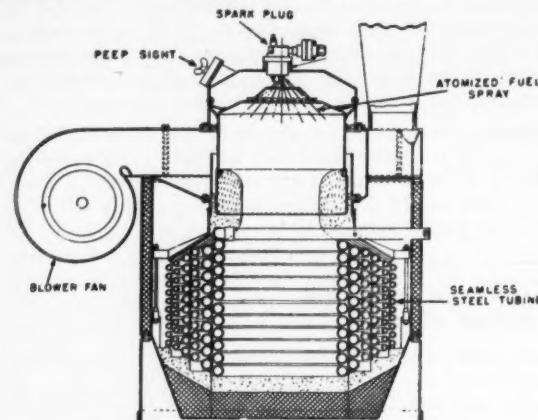
## Steam Generators Develop Full Working Pressures in 2 Minutes from Cold Start

Special coils, made of 300 ft. of seamless pipe, are tested at 1200 psi

**USES:** To supply steam heat, high working steam pressures, or large quantities of process steam for short or sustained periods.

**Features:** Generators supply steam at full working pressures 2 minutes after firing up.

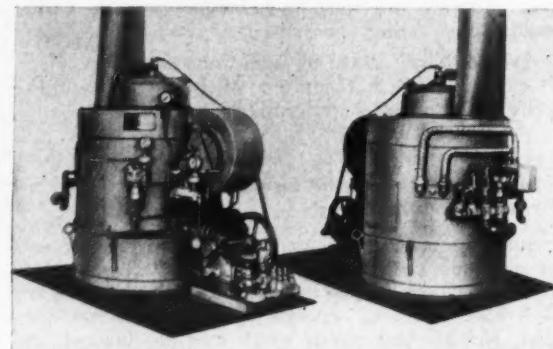
**Description:** As illustrated in diagram, fuel oil is atomized



Special coil makes possible development of full working pressures in less than 2 min.

ized and burned at top of generator. Blower fan swirls hot gases over special coil, made of 300 ft. of seamless pipe, and steam generation begins immediately.

To start generator, the motor switch is turned on and the boiler feed valve is opened. Automatic controls then take



Compact steam generators maintain working pressures automatically

over operation of the generator. Flame is cut off in 2 min., when desired pressure is reached, and is reignited when pressure drops 15 lbs. Steam is made as needed; no long recovery period is required to build up depleted pressures.

Controls shut off generator if water supply fails, if fuel

pressure drops, if steam temperature rises above preset level, or if oil does not ignite.

Generators are available in sizes that develop from 300 lbs. steam per hour to 4000 lbs. steam per hour. Working pressures on all generators are from 50 to 600 psi. Seamless pipe used in coils is tested for 1200 psi hydro pressure.

**Source:** Produced by Vapor Heating Corp., Dept. CP, 4501 W. 16th St., Chicago, Ill. . . . or for more information check CP 2213 on handy form, pages 2 and 3.

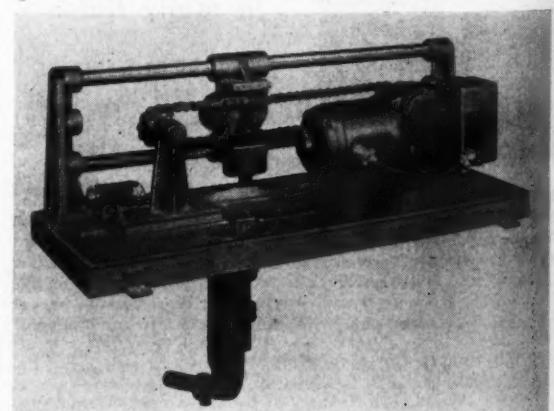
**Accurate, automatic sampling of wet or dry materials in continuous processes . . .**

automatic sampler takes uniform sample cuts at intervals ranging from 5 to 60 min.

**Uses:** To take uniform samples, automatically from moving streams of wet or dry materials in continuous processes.

**Features:** Compact, simple, reliable. Adjustable sampling intervals and cutter openings.

**Description:** As illustrated, motor and speed reducer are mounted directly on base; they drive sprocket wheel which carries roller chain. Chain is also carried over idler sprocket with adjustable stand, permitting maintenance of



Automatic sampler for continuous processes

correct chain tension. Cutter carrier slides back and forth on two supporting rods, actuated by an extended pin in the chain. This pin engages 1 of 2 tripper arms, disengaging at the end of each stroke. This disengagement prevents premature movement in the opposite direction.

At the end of each stroke, power to the motor is cut off by a limit switch, and carrier remains at rest until motor is re-energized by time-switch. At start of next cut, the other

tripper arm is engaged by the chain pin, and cutter is passed through material in the opposite direction. Direction of motor rotation is always the same, eliminating troublesome, complicated wiring, delicate reversing switches, and need for a reversing motor.

As shown in photo, cutter itself is attached to carrier through slot in base, and ejects representative sample into sampling launder or container. In operation, mechanism is covered with dust-and-splash-proof steel hood, bedded in a rubber seal.

Electrical timer is adjustable to give 5, 7 1/2, 10, 15, 20, 30, or 60-min sampling intervals. Sampler is arranged for a 30" cutter travel, at a constant rate of 45' per min. Longer cutter travels can be provided. When specified, cutters can be driven from end of sampler by means of sliding center bar, which can be supplied.

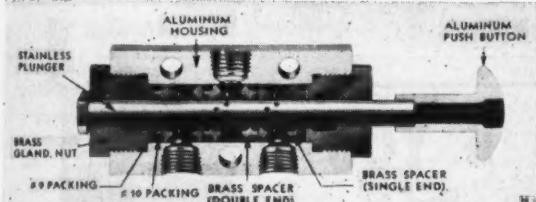
Source: Product of Hardinge Co., Dept. CP, 240 Arch St., York, Pa. . . . or for more information check CP 2214 on handy form, pages 2 and 3.

**Air, oil or water up to 125 psi,  
150° F, controlled by small  
single-plunger valves . . .**

piped and open-exhaust types tapped for 1/8 or 1/4" pipe connections; push-pull or spring plungers

Uses: Line of small, single-plunger control valves for air, oil or water at pressures up to 125 psi maximum (also vacuum) at temperatures not exceeding 150°F.

Well-suited for use with manually-controlled presses, pilot circuits, and in other processing cycles when frequent



Sectional view of single-plunger control valve

manual operation is required. In two classifications: Class "O" valves have piped exhaust; Class "OE" have open exhaust and should be used with air only.

Features: Can be fully disassembled for repacking, and reassembled in few minutes without disturbing connecting piping. Minimum operator-fatigue. Sturdy, simple and easily operated.

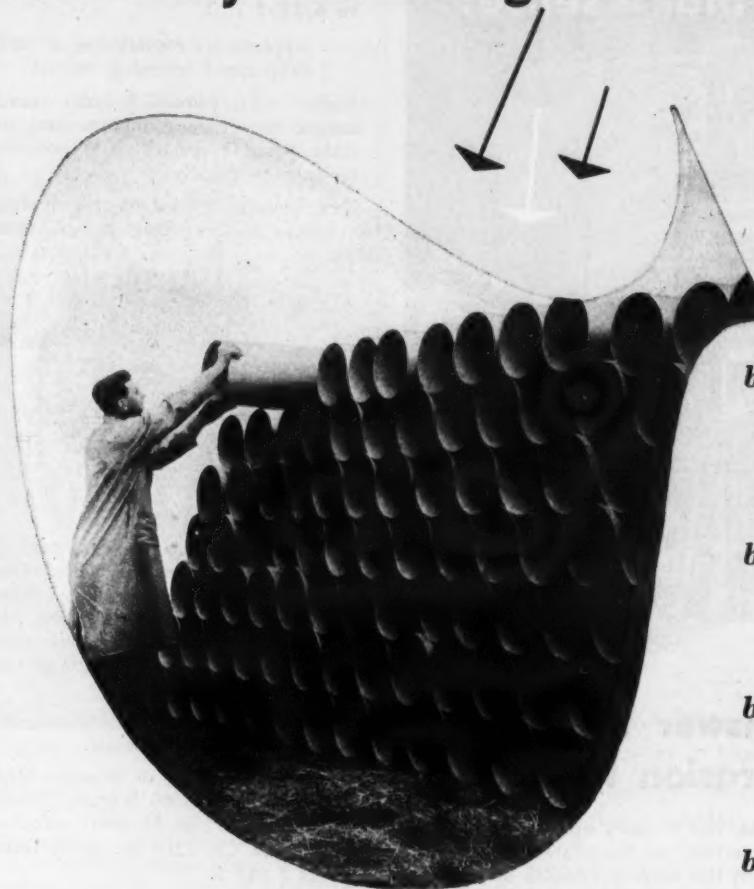
Description: Consists of aluminum housing; hollow stainless steel plunger with precision-placed ports; carefully-dimensioned brass spacers accurately positioned end-to-end on each other (not through packing); efficient "O" ring packers; closing brass gland nuts and aluminum push-button.

Valves are balanced, will remain in position until changed. When spring-return action is desired, a spring can be mounted between push-button and gland nut. Since flow is through plunger and around seals, rather than through them, life of packing and valve parts is prolonged with resultant fewer repairs and less maintenance.

Both "O" and "OE" series are tapped for either 1/8 or 1/4" pipe connections, and available in 2-way, 3-way open exhaust, 3-way piped exhaust, double 2-way, 4-way and 5-way designs; also with push-pull or push-and-spring return actions. Data sheets contain full specifications.

Source: Manufactured by C. B. Hunt & Son, Inc., Dept. CP, Salem, O. . . . or for more information check CP 2215 on handy form, pages 2 and 3.

# here's why TRENT large diameter stainless steel tubing is BETTER!



**better!**

TRENT Large Diameter (4" to 30") Stainless Tubing is *finished* tubing — machine-formed, machine-welded, machine-sized for uniformity.

**better!**

TRENT Large Diameter (4" to 30") Stainless Tubing is made in a *tube mill* by *tube* experts.

**better!**

Tested cold rolled sheets . . . completely fused into *finished* tubing without *added* rod metal.

**better!**

No zone of weakness for corrosion to attack.

**better!**

Uniform section, metallurgically correct.

**better!**

Available for fabrication with your selected fittings . . . whether welding, van stone, or clamp type.

**better!**

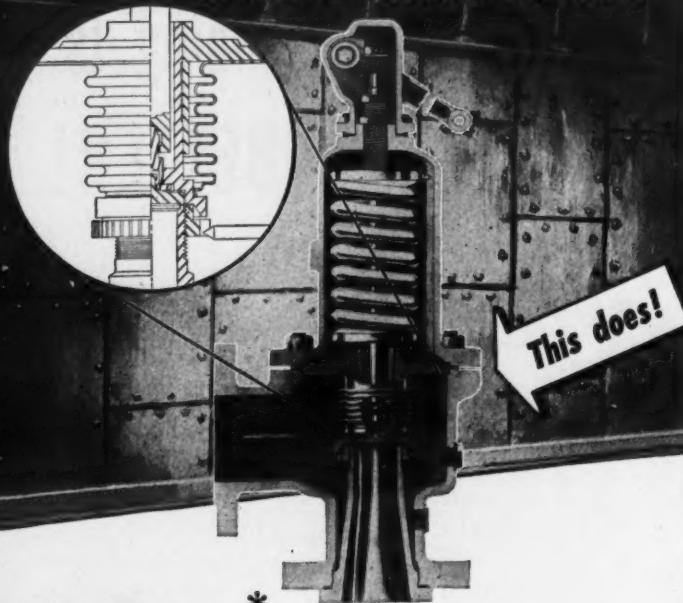
All finishes available.

# TRENT

## STAINLESS STEEL TUBING

When inquiring check CP 2216 on handy form, pgs. 2-3

# An "IRON CURTAIN" should make sense!



## FARRISEAL Is The READY Answer To Safety Valve Corrosion Problems:

The next time you need safety valves, don't worry about corrosion. Just remember the FARRISEAL "iron curtain" — the protective Stainless Steel Bellows. Just remember what this original FARRIS development does . . .

- COMPLETELY PROTECTS GUIDING SURFACE, SPRING, and STEM from lading vapor or fluid.
- FLEXIBLY JOINS THE DISC TO THE MAIN BODY GASKET. The valve guide can't be fouled under any conditions.
- FULLY PROTECTS ALL WORKING PARTS FROM CORROSION.
- ALWAYS SAFE — bound to open at set pressure.

No other safety valve has these FARRIS features. Only FARRIS has designed a stock line of safety and relief valves especially for service where corrosive conditions may make ordinary valves useless.

**SEND FOR** new FARRISEAL Bellows Bulletin  
and new 72-page Engineering Data Book and Catalog.

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Patents Pending

FARRIS ENGINEERING CORPORATION  
406 Commercial Avenue, Palisades Park, N. J.

**Farris**  
SAFETY and RELIEF VALVES

FARRIS keeps pace with advancing power and process engineering

When inquiring check CP 2217 on handy form, pgs. 2-3

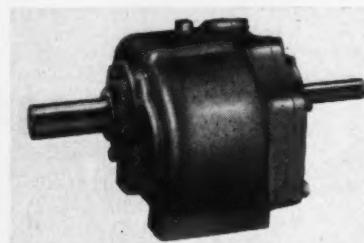
## PROCESSING EQUIPMENT

**Transmissions provide speed reductions to 6.31:1 . . .**

supplement constant-speed and multi-speed reversing motors

**Uses:** To provide broader speed ranges to reversing motors, and to make possible special ratios not obtainable electrically.

**Description:** Two over-running clutches, one engaging in clockwise



Two-speed transmission

and the other in counter-clockwise direction, provide two speeds. One speed is direct motor speed, other speed is at pre-selected reduction, and is obtained by reversing motor rotation. Output shaft does not reverse direction.

Supplied for use with 5, 10, 15, 20, 25, and up to 50 hp-motors.

**Source:** Product of Western Mfg. Co., Dept. CP, 3400 Scotten, Detroit 10, Mich. . . or for more information check CP 2218 on handy form, pages 2 and 3.

**Compensate for both angular and parallel misalignment with new bearing . . .**

pillow block sleeve bearing has neoprene mounting

**Uses:** To reduce noise, vibration, and excessive wear caused by shaft misalignment.

**Features:** Compensates for both angular and parallel misalignment.

**Description:** Unit consists of Oilite bearing, enclosed in bushing of neoprene. Base of stamped, welded steel is cadmium plated, requires no further protection.

It is reported that installation time is greatly reduced because of the bearing's automatic compensation for any type of misalignment. Lubrication is accomplished by simply applying oil directly to neoprene bushing.

**Source:** Manufactured by Bushings, Inc., Dept. CP, Coolidge Highway at 14 Mile Rd., Royal Oak, Mich. . . or for more information check CP 2219 on handy form, pages 2 and 3.

## HERE'S HELP

for your testing and measuring problems



At Mohawk Carpet Mills this G-E Spectrometer made it possible to double the amount of wool dyed at one time

You may be able to solve your measurement problems with General Electric specialized instruments. This comprehensive G-E family includes equipment for:

**MEASURING**

Time, Speed, and Torque  
Force, Strain, and Thickness  
Vibration, Sound, and Balance

**TESTING**

Materials  
Coils and insulation  
Leak-tightness

and for **CHEMICAL ANALYSIS**

Your problem, particularly if it is one common to industry, may justify developing a new instrument. Apparatus Dept., Section 687-9, General Electric Company, Schenectady, New York.

**GENERAL**  **ELECTRIC**

When inquiring check CP 2220 on handy form, pgs. 2-3

**IF YOU**  
Had to  
clean the  
Laboratory ware  
or Machine Parts



**ALCONOX would be a must!**

No matter what you want to clean . . . glassware, metal ware, porcelain ware, machine parts . . . No matter how dirty or greasy they may be . . . ALCONOX will make them sparkle.

**In hard water, soft water, hot or cold**

This superior wetting agent is equally effective. It actually lifts off dirt, grime and grease faster and cleaner than anything you have ever tried. Just wash and rinse. Practically no toweling needed. Economical, too. One spoonful makes a gallon of active cleanser ready to go to work on your toughest job.

**Tested and Used**

by many leading laboratories, hospitals, food and industrial plants.  
**Test it yourself . . . on a tough job.**  
3-lb. box \$1.50; 12-box carton \$16.20; 50-lb. bag \$18.00

Order some today from your Laboratory Supply dealer, or write to us for FREE SAMPLE and name of your nearest dealer.

**ALCONOX Inc.**  
Manufacturing Chemists

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When inquiring check CP 2221 on handy form, pgs. 2-3

CHEMICAL PROCESSING Preview

# UNLOAD Your Agitating Problems ON

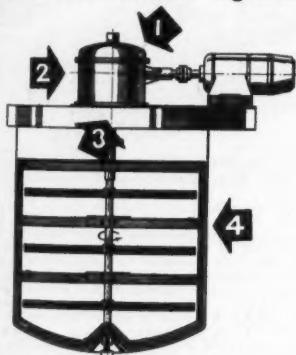


## NETTCO

Put a Nettco Engineered Agitator on the job and end your agitating troubles! Nettco drives are built to "take it": housings, bearings, gears, and shafts are conservatively rated to insure hard-working dependability on the toughest services. By combining the correct drive with proper stirrers our engineers make sure the Nettco installation conserves valuable processing time and is easy on the operating pocketbook as well. Stratification, viscosity, tank size, baffle and stirrer design,—and other factors—are fully evaluated in the light of years of agitation engineering by Nettco. That's why it pays to buy Nettco.

Write for engineering recommendations.

### Nettco Two-Motion Agitator



1. New Nettco two-motion Duplex Drive.
2. Fully lubricated for quiet, dependable operation.
3. Positive, leak-proof design—no stuffing gland.
4. Two-directional stirrer—ideal for viscous mixtures.

NEW ENGLAND TANK & TOWER CO.  
EVERETT 49, MASS.

When inquiring check CP 2222  
on handy form, pgs. 2-3

JULY, 1949

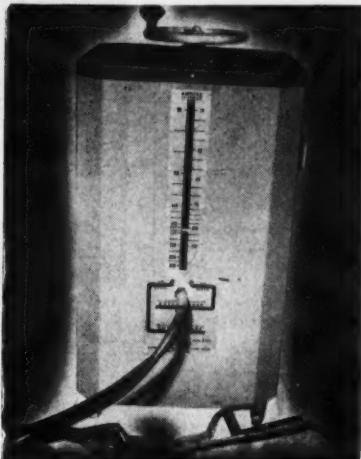
### PROCESSING EQUIPMENT

#### Light or heavy-gauge jobs welded by wheeled AC machine . . .

stepless heat-control varies from 20 to 285 amps; accommodates electrodes of 1/16 to 1/4" diam.

Uses: Mobile, double-duty AC welder for welding either light or heavy-gauge materials with only one machine.

Features: Smooth, highly accurate, stepless heat-control for quick, easy adjustment of current over entire welding range. Adjustments are said to be so simple and dependable that small-diameter arc electrodes may be used



Mobile AC welder

without fear of waste or damage. Combines efficiency and low cost with quality welding.

Smooth running casters permit moving from job to job with little effort. Currents ranging from 20 to 285 amps may be selected by means of amperage selector control. Easy starting. Stable arc characteristics. Low spatter loss.

Description: Accommodates electrodes from 1/16 to 1/4" diameter. Overall dimensions, 17 x 17 x 32". Void of boosters, stabilizers or other auxiliary attachments. Specially-designed drip-proof case with natural convection cooling eliminates need of fans. Shielded "off-on" switch. Standard accessories include electrode holder with cables and ground clamps, wall receptacle and plug, power cable and helmet. Capacity fully guaranteed under new NEMA and UL rating.

Source: Eutecarc AC Welder, made by Eutectic Welding Alloys Corporation, Dept. CP, 40 Worth St., New York 13, N. Y. . . . or for more information check CP 2223 on handy form, pages 2 and 3.

#### Quick splicing with compact wire connectors . . .

new construction eliminates loose spring inserts; units approved by Underwriters' Laboratories

Uses: To connect hundreds of combinations of wires, ranging from two No. 18 wires to three No. 10 wires; solid, stranded, or a mixture.

Features: New design eliminates loose spring inserts.

Description: Connectors are tapered at top, permit use in restricted spaces too small for conventional connectors. New high-pressure molding process and precision coiling of taper springs prevents coil springs from working loose. Connectors have raised lands for sure grip, faster splicing. Approved by Underwriters' Laboratories.

Source: Produced by Holub Industries, Inc., Dept. CP, Sycamore, Ill. . . . or for more information check CP 2224 on handy form, pages 2 and 3.

AT  
HIGH  
TEMPERATURES  
IT'S...



The rapid development of synthetic fibers has made possible a better selectivity in filter cloths for your specific filtration problem. Where high temperatures are encountered, we recommend NYLON for caustics and ORLON,\* an acrylic fiber cloth, for acids.

In addition to their chemical and thermal resistance features, these fibers have excellent tensile strength and abrasion resistance. They offer low moisture absorption and are not harmed by molds or fungi.

We have been weaving filter cloth for more than forty years and have pioneered in the weaving of synthetic fibers into industrial filter media. These years of weaving industrial filter fabrics have furnished us the background and the "know how" necessary to produce synthetic filter media having superior filtering characteristics.

When requesting literature and pilot test samples, tell us about your problem.

\*T.M. E. I. duPont de Nemours & Co. (Inc.)



Weavers of Industrial Filter Media for over Thirty Years

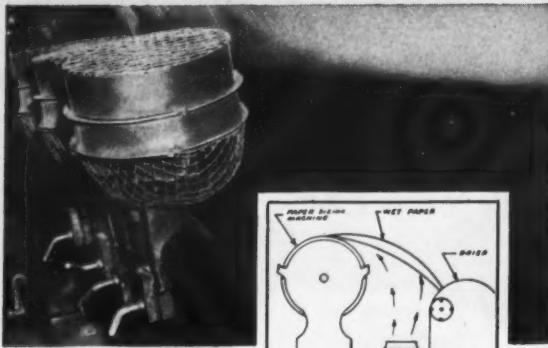
National Filter Media Co.

General Offices—Mills: New Haven 14, Conn.  
Western Office—Factory: Salt Lake City 1, Utah

#### Sales Offices—Representatives

Chicago, Ill. Cincinnati, Ohio Houston, Texas Oslo, Norway  
3627 West 19th St. Bassett Center Bldg. 1406 Second National Bank Bldg. Nicolai Fris  
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Edward L. Bateman

When inquiring check CP 2225 on handy form, pgs. 2-3



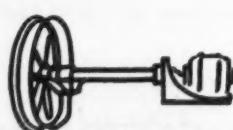
## Fun House for paper skirts

It was a great gag when your girl friend visited an amusement park and a burst of compressed air ballooned her skirt. But "ballooning" paper is serious business with a well-known paper company.

The paper had to be completely free of wrinkles before contact with the drier rolls. The method was provided quickly by a battery of CD (direct-connected) Propellair fans mounted as shown above. These fans have individual speed controls and are mounted for complete directional adjustment. This permits exact compensation for varying weights or widths of paper. This is an unusual application for Propellair. But if air, fumes or dust must be moved, Propellair fans can do it efficiently. Types available for roofs, stacks, ducts, windows and with pedestals or stands. Sizes to 60 inches. Capacities to 88,000 c.f.m. — Two types are illustrated below.



DIRECT-CONNECTED,  
MANY USES



EXTENDED-SHAFT,  
PROTECTS MOTOR

**PROPELLAIR**  
DIVISION OF ROBBINS & MYERS, INC.  
SPRINGFIELD 93 OHIO

When inquiring check CP 2226 on handy form, pgs. 2-3

Page 78

## PROCESSING EQUIPMENT

**Free-flow valve has but two parts which rotate around seat ring . . .**

makes right hand angle, left hand angle, or straight-through pattern; handles corrosive liquids

**Uses:** For a wide range of control service, but, especially suitable for handling erosive, corrosive, and viscous fluids, which may be carrying solids.

**Features:** Valve body comprised of two simple castings. When bolted together with the seat ring, serving as a bridge or separation unit, maximum strength and flexibility is provided.

The clean, smooth flow passages contribute to increased flow capacities. There are no pockets or shoulders to accumulate solids.



Single seated valve embodies threadless assembly

Valve body is unique in that the two parts may be rotated about the seat ring in assembly to form a right hand angle, left hand angle or a straight-through pattern. The addition of a simple straight adapter makes a conventional angle pattern valve body.

This single seat embodies a threadless assembly so that erosive and corrosive fluids have no place to start their attack. Replacement of the valve seat and plug stem assembly is accomplished in a few minutes on the job, and without special tools.

With a claimed weight saving of up to 50%, the problem of handling and transportation has been greatly reduced in this new design.

**Description:** Design of both valve body and power unit contribute to minimum maintenance requirements. Simplicity of parts-interchangeability and replacement is exceptional.

To power this new valve, a revolutionary actuating unit was developed, which is of the piston type and provides operating power from 5 to 10 times that available with the conventional spring and diaphragm assembly. Featuring much longer strokes, to take full advantage of the valve body construction, this powerful unit has an inherent stabilizing factor not found in various other designs.

An integral valve positioner unit is incorporated in piston actuated assembly, completely housed within the dome of

## Safe Footing



Write for Booklet  
INLAND STEEL COMPANY  
38 S. Dearborn Street  
Chicago 3, Ill.

*Inland*  
**4-WAY SAFETY PLATE**  
Reg. U. S. Pat. Off.

When inquiring check CP 2227 on handy form, pgs. 2-3



Motor Driven APCO Two Stage, Water  
Jacketed, Turbine-Type Pump with Flange Connections.

**SINGLE  
AND  
TWO STAGE**

- 1750 R.P.M.
- 

**WIDE RANGE  
OF SIZES**

- 
- FOR SCREW  
OR FLANGE  
CONNECTIONS

These notable pumps are made available "by request" of many of our engineer friends. Water jacketed APCO pumps were developed specifically for the efficient handling of high temperature and highly volatile liquids. They are designed to compensate for expansion and contraction due to heat. Because APCO's multi-vaned impeller handles vapor or air along with the liquid there can be no vapor lock within the pump. The cool liquid in the water jacket reduces the temperature of any liquid leakage through the extra deep stuffing boxes — thus flashing or vaporizing of the leakage is prevented. May be made of any machinable metal for handling corrosives. Requires but small amount of such special metal — with resultant economy. We invite your consideration of the many features of these fine pumps.

**AURORA CENTRIFUGAL PUMPS**

A complete line, notable for streamline coordination between impellers and shells, including Single and Two Stage Horizontally Split Case, Side Suction, Vertical, Non Clog, Sump, Mixed Flow, Special Design, etc.

DISTRIBUTORS IN PRINCIPAL CITIES

**AURORA**  
Always  
PUMPS

**AURORA**  
PUMP COMPANY

62 Loucks St., AURORA, ILLINOIS

When inquiring check CP 2228 on handy form, pgs. 2-3

CHEMICAL PROCESSING Preview

## PROCESSING EQUIPMENT

the power unit, its only connection with the moving mechanism being by a frictionless spring.

This simplified arrangement provides positive operation. All external links, levers and other complicated connecting mechanisms are eliminated.

Completely concealed to prevent unauthorized tampering, no field adjustments of any kind are required. Valves are available in a selection of materials such as cast steel, Type 316 stainless steel, Durimet 20, solid nickel and Hastelloy "B" and "C". Other castable alloys are supplied on special order.

Source: "Domotor" valves are available through the Annin Co., Dept. CP, 3234 Mines Ave., Los Angeles, Cal. . . . or for more information check CP 2229 on handy form, pages 2 and 3.

### Air purifier permits saving 2.5 tons refrigeration per hr . . .

lightweight 24" units require minimum duct accommodations; design features large filtering-area

Uses: Self-contained, cell-type units of light-weight metal for purifying air in air conditioning and ventilating systems. For recovering or converting stale, odorous air to fresh air.

Features: When used in place of outdoor-air ventilation, it is estimated that each cell purifies air at rate equivalent to 2.5 tons of installed refrigeration-capacity and 80,000 Btu per hr of installed boiler and radiation-capacity. This represents a saving of 1-1/2 kw per average cooling-season hr and 1/2 gal fuel oil per average heating-season hr.

Yet, they are highly compact. "Accordian pleat" construction of perforated filter element (see cut) provides filter-face area of 28 sq ft in a space of less than 3 cu ft — or a ratio of better than 9 to 1. Odor-holding capacity of more than 5 lbs condensed impurities assures high efficiency and economy. Manufacturer reports service life up to 3 yrs before carbon reactivation is necessary.

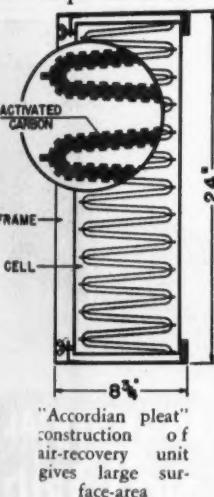
Low air-flow resistance, and ease of installation and servicing comparable to that of a

dust filter, are also reported.

Description: Cells have handles and locking devices, and are furnished complete with permanent supporting frames suitable for riveting on the job. Denoted as Type "C", with capacity of 1000 cu ft air per minute. Overall dimensions, 24 x 24 x 8-1/4" deep. Can be installed in multiple, either in flat or "V" arrangement, two 24" units comprising each "V". For abnormal odor concentrations, 2 cells in series per 1000 cfm are recommended.

Minimum duct accommodations. Requires no preliminary engineering design.

Source: W. B. Connor Engineering Corp., Dept. CP, 112 E. 32nd St., New York 16, N. Y. . . . or for more information check CP 2230 on handy form, pages 2 and 3.

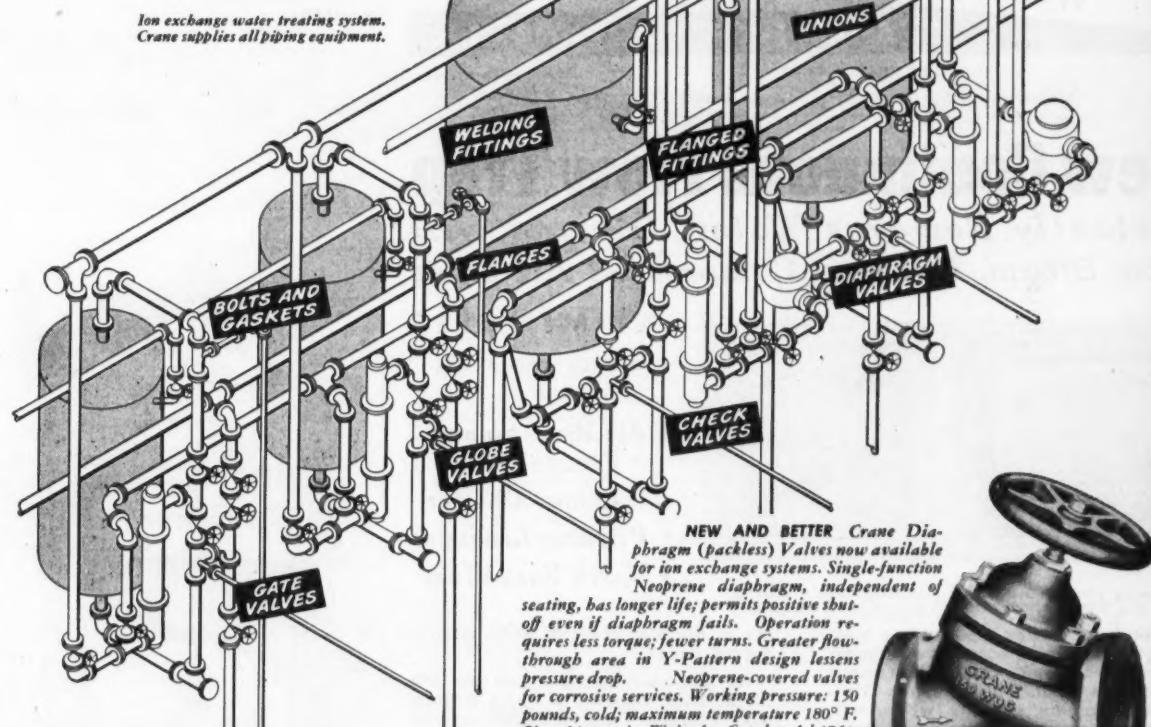


# For process piping in ion exchange ...CRANE has everything you need

In ion exchange—whether for water treating systems, as shown here, or for any other process—Crane can supply all piping equipment for your installation. Check your needs against the Crane Catalog. You'll find it offers an unequalled selection of valves, fittings, pipe and accessories—in brass, iron, steel, and alloys—available on one order to your local Crane Branch and Wholesaler.

Why not learn the advantages of standardizing on Crane? It's a **Single Source of Supply** complete enough to simplify every piping procedure, from design to erection to maintenance. **One Responsibility** for materials helps to assure the best installations, avoids needless delays. **High Quality** in every item from the broad Crane line certifies uniform dependability throughout process piping systems.

CRANE CO., 836 S. Michigan Ave., Chicago 5, Ill.  
Branches and Wholesalers Serving All Industrial Areas



**NEW AND BETTER** Crane Diaphragm (packless) Valves now available for ion exchange systems. Single-function Neoprene diaphragm, independent of seating, has longer life; permits positive shut-off even if diaphragm fails. Operation requires less torque; fewer turns. Greater flow-through area in Y-Pattern design lessens pressure drop. Neoprene-covered valves for corrosive services. Working pressure: 150 pounds, cold; maximum temperature 180° F. Sizes: 1/2 to 4-in. Write for Catalog Ad-1761.



EVERYTHING FROM . . .

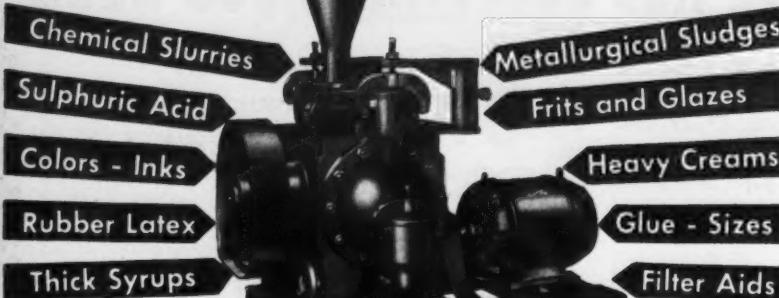
VALVES • FITTINGS  
PIPE • PLUMBING  
AND HEATING

# CRANE

FOR EVERY PIPING SYSTEM

When inquiring check CP 2231 on handy form, pgs. 2-3

## The Pump that Deep Cuts Cost of Operation and Maintenance



**SHRIVER DIAPHRAGM PUMP**  
 • No Stuffing Box  
 • No Leakage  
 • No Wear on Working Parts

T. SHRIVER & COMPANY, Inc.

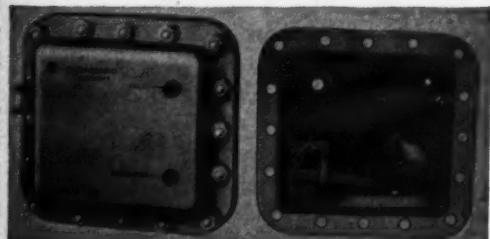
846 HAMILTON ST.

HARRISON, N. J.

When inquiring check CP 2232 on handy form, pgs. 2-3

## New Continuous Flow Trap

Instantly Removes Water, Oil and Dirt from Steam, Gas and Compressed Air Lines



Showing pipe connections on trap housing.

Showing simple working mechanism in housing.

Heavy duty, large capacity trap ideal for pipe lines or processing equipment which needs rapid, complete drainage of condensate or foreign matter. Provides maximum capacity where uniform temperature and pressure conditions are necessary. Pancake-shaped housing contains simple slide valve and float mechanism which regulates flow of condensate or fluid according to its accumulation in the trap. Movement of the slide valve over the discharge orifice with the rising or lower-

ing of the float prevents short circuiting of vapor.

All pipe connections are on one side of the trap; removal of cover permits easy cleaning without breaking the line.

Made in screwed and flanged types of cast steel or cast iron with stainless steel internal parts for  $\frac{1}{2}$ ",  $\frac{3}{4}$ " and 1" pipe size, pressures to 300 p.s.i. and temperatures to 750° F. Write for Bulletin No. 600.

**W. S. ROCKWELL COMPANY**

220 ELIOT STREET • FAIRFIELD, CONN.

When inquiring check CP 2233 on handy form, pgs. 2-3

## PROCESSING EQUIPMENT

### Unit heaters operate near high ceilings

Circular, downdraft unit heaters, designed for installations where ceiling height ranges up to 45 ft., are fully covered in 8-page, 2-color bulletin. Described as particularly effective where partitions, machinery, lockers, etc., obstruct horizontal air flow, the heaters are pictured in use with each of a series of diffusers, to form varying patterns of heat areas for specific applications.

Many tables give capacity data, conversion factors, approximate mounting heights and areas of coverage, and dimensions. Schematic diagrams show construction.

Cat. 16C-1, issued by Fedders-Quiggin Corp., Dept. CP, 83 Tonawanda St., Buffalo 7, N. Y. When inquiring specify CP 2234 on handy form, pages 2 and 3.

**Mix and heat heavy, thick materials rapidly . . .**

jacketed stainless kettle employs U-type agitator

**Uses:** Polished stainless steel mixer for pastes, glue, adhesives, sizes, other heavy or thick materials. Adaptable, with certain modifications in drive mechanism and agita-



Jacketed stainless mixer to mixing nearly any thick or viscous material.

For operation at atmospheric pres-

## Northwestern SAFETY WATER HEATER

A complete, compact unit containing regulator and safety features built into or attached to heater head. No other accessories needed. Built in seventeen sizes.

Installation requires attachment of only three pipes — high pressure steam supply, cold water inlet and hot water outlet. Head, coil and equipment removable as a unit.

Normally delivers water at approximately 120° F. Satisfactory for wash room use yet not hot enough to scald. Long life through minimum corrosion.

### • FEATURES •

Completely insulated and protected by a waterproof covering.

Glass lined A.S.M.E. tanks.

Pressure gauges provided to visually check operation.

Condensate may be returned to cold water to facilitate economical heater operation.



Write for the Heater Bulletin.

**THE COE MANUFACTURING CO.**

When inquiring check CP 2235 on handy form, pgs. 2-3



## INDUSTRIAL NO Drip COVER PIPES TANKS, WALLS

Anyone can brush, trowel or spray NoDrip on any clean, dry surface. Goes on like plaster, forms a seamless, protective coating. STOPS CONDENSATION DRIP! NoDrip keeps equipment and floors safe and dry; prevents corrosion of metal and prolongs the life. Acid, alkali and brine resistant. Comes in 1, 5 and 55 gal. drums, ready for use.

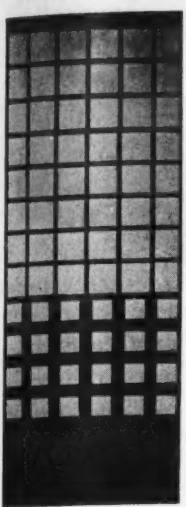


TRY NO DRIP  
Apply NoDrip to a small area, compare the results with uncovered portions.

Send for free NoDrip Handbook

J. W. MORTELL CO. 530 Burch St., Kenkakee, Illinois  
When inquiring check CP 2236 on handy form, pgs. 2-3

## To meet specific screening requirements



Hendrick makes screens to specifications for all kinds of screening processes. The illustration shows a typical example — a flux screen made for a well known chemical company. Note the two different sizes of perforations in the same plate. Hendrick has made these screens with perforations ranging from 5" x 5" to 7 1/2" x 7".

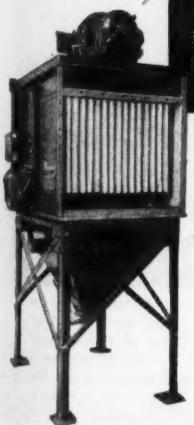
Write us regarding your screening requirements and we will gladly give you the benefit of our seventy-odd years of screen-making experience.



**HENDRICK**  
Manufacturing Company  
32 DUNDAFF STREET, CARBONDALE, PA.  
Sales Offices in Principal Cities

Perforated Metals  
Perforated Metal Screens  
Architectural Grilles  
Micro Open Steel Flooring,  
"Shur-Site" Treads and  
Armorgrids

When inquiring check CP 2237 on handy form, pgs. 2-3



### STOP DUST at the source

#### with this Pangborn Unit-Type Collector

If you have concentrated dust conditions, install this Pangborn "CL" Collector—a small factory-assembled model. Located directly at the dust source, it gives you greater flexibility—may offer greater savings than a large central system.

This Pangborn "CL" is all metal (except for filter cloths)—equipped with famous Pangborn non-sag screen frames (individually removable) and motor-driven screen shaker. Cloth area totals 180-820 sq. ft.

Pangborn Dust Control Equipment helps manufacturers to operate dust-free plants, increase production, improve product quality and reclaim valuable dust by-products.

WRITE for details on how to solve your dust problem.  
PANGBORN CORPORATION, 286 Pangborn Blvd., Hagerstown, Maryland.

Look to Pangborn for all latest developments in Blast Cleaning and Dust Control Equipment.

#### STOP THE DUST HOG

from stealing profits with

# Pangborn

DUST CONTROL

When inquiring check CP 2238 on handy form, pgs. 2-3

## PROCESSING EQUIPMENT

sure with 15 psi steam or hot water in jacket.

Features: U-type agitator, simultaneously stirring and removing material from sides and bottom of kettle, assures uniform, rapid heating and mixing without burning or caking.

Description: Agitator is driven through gear mechanism by chain and motor. Water-tight cover, flush-bolted to kettle top, is fitted with swing-bolt manhole, a thermometer well and two "blow-out" pipe openings. Water gauge with stainless steel fittings is located on jacket. Flush-type stainless steel plug valve and sanitary valve arrangement mounted in bottom of kettle regulate running-off of working mixture.

Source: Built by L. O. Koven & Brother, Inc., Dept. CP, 154 Ogden Ave., Jersey City 7, N. J. . . . or for more information check CP 2239 on handy form, pages 2 and 3.

#### Manual starters do work of magnetic types . . .

used instead of magnetic starters with pushbutton control

Uses: Designed for use with single or polyphase AC motors where across-the-line starting is permissible. May be used for starting AC motors driving small machine tools, pumps, fans, and for other applications. In many instances, it is possible to apply these starters in place of magnetic starters with remote pushbutton control, thus eliminating need for additional pushbutton stations.

Features: Silver-to-silver double-break contacts. Front-operated. Trip-free thermal overload protection. Interchangeable overload heaters. Quick make and break. Provision for padlocking. Adequate wiring space.

Description: Bulletins 3151 starters consist essentially of a mechanically-actuated switch mechanism with thermal overload protection. The molded contact head has two, three or four main poles with silver-to-silver double-break contacts. Components are attractively housed in NEMA type 1 general-purpose enclosures.

Starters are available in 2, 3 and 4-pole forms. Maximum enclosed three-phase rating for size 0 starters is 2 hp., 440-550 volts, 60 cycles; for size 1 starters 7 1/2 hp., 440-550 volts, 60 cycles.

Source: Ward Leonard Electric Co., Dept. CP, Mount Vernon, N. Y. . . . or for more information check CP 2240 on handy form, pgs. 2 & 3.



# National PRESSURE VESSELS

meet exacting codes and requirements for

CHEMICAL PLANTS

PETRO CHEMICAL PLANTS

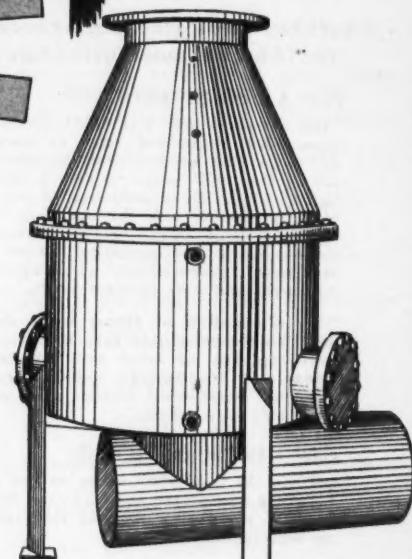
REFINERIES

STEEL INDUSTRIES

made to specifications from

- OPEN HEARTH
- STAINLESS
- STAINLESS CLAD
- NICKEL
- NICKEL CLAD
- ALUMINUM

When you specify National pressure vessels . . . you place your requirements in the hands of an experienced organization . . . capable of fabricating the most intricate industrial and processing equipment. Our modern manufacturing facilities and labor-saving production methods, assure you of prompt service in the construction of pressure vessels that meet exacting codes and requirements.



Hydrogen Vent and Seal Tank  
5'6 1/2" x 45" O.D.  
Plate Thickness 3/8"

NATIONAL PRODUCTS

Pressure Vessels  
Galvanizing Kettles  
Annealing Covers  
Tin Pots  
Salt Annealing Pots  
Wire Annealing Pots  
Special Welded Tanks

# National

## ANNEALING BOX COMPANY

API-ASME Codes • Stress Relieving • X-ray • Sand Blasting

Pledged to Quality since 1895

WASHINGTON, PENNA.

When inquiring check CP 2241 on handy form, pgs. 2-3



## CASH STANDARD Streamlined TYPE 1000 PRESSURE REDUCING VALVE

### Here's why IN THE USERS OWN WORDS . . .

(Note how users' statements check against the 10 benefit points listed below)

#### FROM A CHEMICAL MANUFACTURER

"We purchased our first CASH STANDARD Type '1000' Streamlined Valve six years ago and since then we have installed more than 200 of the '1000' valves ranging in size from  $\frac{1}{4}$ " to  $1\frac{1}{2}$ ". This is indicative of our complete satisfaction with the operation of the '1000'. A large number of the pressure reducing valves are operating above your maximum specifications of temperature and pressure with excellent results.

"The elimination of steam leaks and the low maintenance cost have been especially gratifying. The low initial cost, low maintenance, and trouble-free operation results in the most economical pressure valve we have been able to purchase."

#### FROM A BUTTON MANUFACTURER

WE use the type '1000' valves on one of the toughest operations and they have operated 24 hours per day for the past 2 $\frac{1}{2}$  years with no maintenance."

#### WRITE FOR

BULLETIN  
962

CASH STANDARD  
CONTROLS...  
VALVES

1. Maximum capacity when needed most.
2. Accurate pressure control under toughest working conditions.
3. Trouble-free service.
4. Smooth operation.
5. Tight closure.
6. Speedier production results.
7. Elimination of failures.
8. Cost-saving operation.
9. No spillage.
10. Practically zero in maintenance.

**A. W. CASH COMPANY**  
DECATUR, ILLINOIS

When inquiring check CP 2242 on handy form, pgs. 2-3

Page 82

## PROCESSING EQUIPMENT

### Spray test-films of resins, powdered metals with flame pistol . . .

permits effective use of extremely small samples for evaluation; weighs only  $1\frac{1}{2}$  lbs.

Uses: For spraying any powdered metal, thermo-plastic resin, or combination of the two. Originally developed to produce a film or coating to facilitate evaluation of new materials or processes. Other applications include spraying of pigmented powders, plastics, mixtures or blends of materials. Also spraying protective coatings, such as chemically resistant linings on tanks, conductive films of metals on plastics; non-conductive films of plastics on metals; spraying electrical circuits; sealing joints in polythene sheets; spraying abrasion resistant coatings, porous or non-porous films of plastics, etc.



Flame pistol sprays Polyethylene on test plates

Features: Extremely small samples of powdered material may be used in evaluating coatings. As few as 50 grams of powder will produce a coating that can be subjected to a test. Pistol is light, compact, weighing only  $1\frac{1}{2}$  lbs. May be held in any position when spraying.

Description: Model L Pistol is a production tool in that it is capable of continuous operation. It differs from other models only in capacity. It sprays at a much slower rate. For example, the Model 2000 Pistol will spray up to 100 pounds per hour of powdered hot metal coatings, while the Model L will handle only 10 pounds in the same period.

Pistol is supplied for use with oxygen and propane unless otherwise specified. It can be supplied for use with oxygen and acetylene. The pistol set up for oxygen and propane can be used with oxygen and natural or city gas.

There are connections for four air hoses. Oxygen and gas hoses are connected to the valve chest. Compressed air hose is connected to the air line, and the powder hose is connected to the powder.

The other end of the powder hose can be connected to an auxiliary powder container, or it can be held by hand in any vessel containing the powder to be sprayed.

In operation, powder passes through the controlled temperature flame and is heated sufficiently, in a fraction of a



### Tough, Sheer... Sure Grip on Oily Parts

These new improved light weight Stanzoil RSW-13's are designed especially for handling small parts in testing and assembly, food products packing, etc. Shaped to fit the fingers naturally in gripping position, more hand comfort over long periods of wear. Finger tip gauge cut to .018 for greater sensitivity. Non-slip grip aids precision workers, speeds action. Your plant shows more productivity when employees aren't fumbling with thick, unwieldy rubber gloves. Write today for complete Stanzoil catalog.

Synthetic Rubber Division  
The Pioneer Rubber Company  
641 Tiffin Road Willard, Ohio, U. S. A.  
Los Angeles, California

OVER 30 Years OF QUALITY GLOVE MAKING

When inquiring check CP 2243 on handy form, pgs. 2-3



Hole  
Accuracy  
to  
.0005"

### H & K PERFORATED SCREENS

Screens used in grain testing require an extreme accuracy of diameter for round holes and for dimensions of slotted perforations. Here H & K. screens test only  $\pm .0005$  variation in diameter of all the holes per screen. Such accuracy is a part of everyday H & K production.

H & K Screens may also be had to specifications as to kind and temper of metal — or in plastics, rubber, fabrikoids, etc., practically any sheet, coil or plate material. Your inquiry, regardless of specifications, is invited for recommendation and prices.

Remember—H & K Grilles of Beauty  
for your ornamental applications.

**The Harrington & King  
PERFORATING CO.**

0000 FILLMORE ST., CHICAGO 44, ILLINOIS  
114 LIBERTY ST. NEW YORK 6, N. Y.

When inquiring check CP 2244 on handy form, pgs. 2-3

CHEMICAL PROCESSING Preview

## PROCESSING EQUIPMENT

second, to enable the powder particles to fuse together on the surface being coated.

A sample kit of powders is available, at extra cost, for use in tests. There are 11 metals and 13 plastics, packed in 24 half-pint jars.

The Schori process is being used for laying down films of new materials developed in laboratories subsidized by the Atomic Energy Commission.

Source: Model L Pistol is made by Schori Process Division — Ferro-Co Corp., Dept. CP, 8-11 43rd Rd., Long Island City 1, N. Y. . . . or for more information check CP 2245 on handy form, pages 2 and 3.

### High-pressure cleaning-steam in 90 seconds, from cold start . . .

compact unit cleans machinery, walls, floors, windows; complete nozzle-control of fuel, pump and burner

Uses: Cleans machinery, parts, floors, walls, windows, etc.

Features: Despite its small size — occupying a floor space of only 27 x 37" — it develops a powerful 80-120 lbs. working pressure. Normal 45-gph capacity can be stepped up to 240 gph by means of "Adjusta-Blast" gun, a simple accessory optional at small extra cost.

Develops peak steaming almost instantly, full-powered blast being delivered from gun within 90 seconds from cold start. Large fuel and solution tanks give ample capacity for several hours of operation without refilling.



Portable steam cleaner

flusher. Unit is oil-fired and electric-motor-driven. Furnished with either 6" rubber-tired wheels or 7" semi-steel wheels, or as a stationary unit.

Only requirements for putting portable units into service is availability of electrical outlets and service cold water supply connections. Where units are installed permanently indoors, an 8" minimum-diameter flue connection to chimney, with ventilated stack section at unit, is advisable.

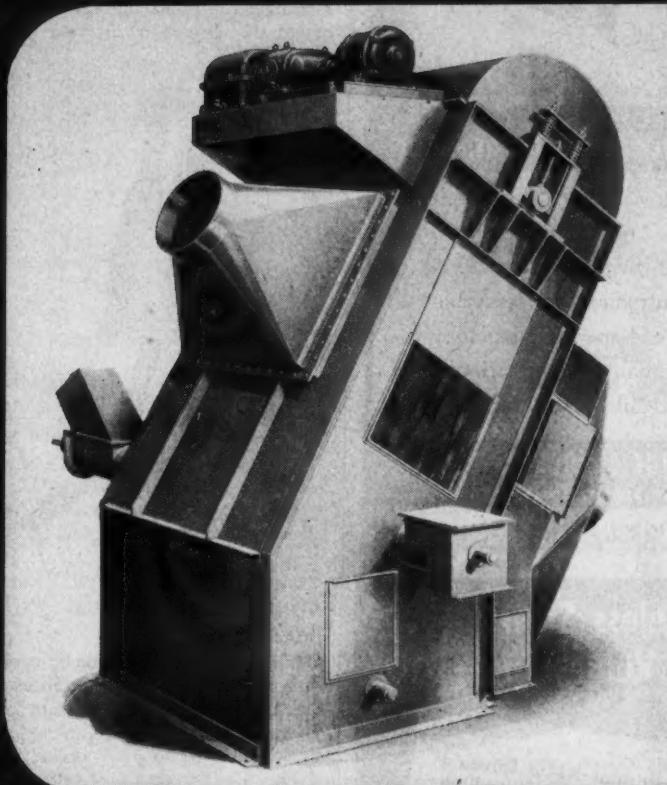
A non-clogging vapor-generator heating coil — not a steam boiler — is extremely simple and safe. Outer coil forms permanent natural water jacket, eliminating need for insulation. Positive proportioning compound feed permits instant selection of desired concentration of cleaning solution to fit the job.

Finish is bright red, baked crackle enamel.

Source: Service Master Hypersure Jenny Steam Cleaner is built by Homestead Valve Mfg. Co., Inc., Dept. CP, Coraopolis, Pa. . . . or for more information check CP 2246 on handy form, pages 2 and 3.

JULY, 1949

## See your own material dried on a test run at LINK-BELT'S DRYER LABORATORY, then . . .



### duplicate that ideal drying performance in your plant on regular daily production . . .

MAY WE SEND YOU LINK-BELT DRYER BOOKS Nos. 1911-A AND 2209?

#### LINK-BELT COMPANY

Chicago 9, Indianapolis 6, Philadelphia 40, Atlanta,  
Dallas 1, Minneapolis 5, San Francisco 24,  
Los Angeles 33, Seattle 4, Toronto 8.  
Offices in Principal Cities.

11,058



When inquiring check CP 2247 on handy form, pgs. 2-3

A Viscometer in the hand...



is worth TWO on the stand!



## The BROOKFIELD portable Viscometer

Rapid viscosity readings at point-of-process are far more valuable than remote lab readings not taken under operating conditions. Viscosity control is made practical through the use of this dependable instrument.

**BROOKFIELD**

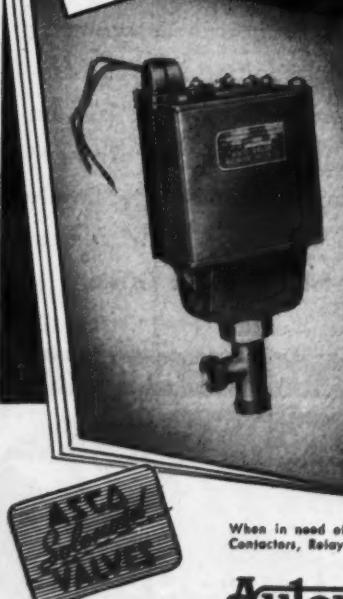
ENGINEERING LABORATORIES, INC.  
205 Porter Street, Stoughton, Mass.

When inquiring check CP 2248 on handy form, pgs. 2-3

## Stainless Steel "Sanitary" Valve Type—DJQ

This particular ASCO Solenoid Valve is ideal for controlling the flow of material in connection with batching operations. Coupled with its "cleanability" feature is its reliability. Fully automatic, it opens and stays open as long as the coil is energized; it closes and stays closed when it is de-energized. Several pipe sizes available.

Write us about your automatic control problem in connection with the flow of liquids or gases, mentioning size of pipe, nature of materials and pressure. If this valve doesn't fit the picture, we have scores of other designs from which to select.



When in need of Automatic Transfer Switches, Remote Control Switches, Contactors, Relays, and Specialized Electromagnetic Controls, come to us.

**Automatic Switch Co.**

379 LAKESIDE AVENUE • ORANGE, N. J.

When inquiring check CP 2249 on handy form, pgs. 2-3

## PROCESSING EQUIPMENT

Acids pour from carboys without splashing . . .

device allows uninterrupted flow without pumping, siphoning

Uses: Carboy drainer for safer pouring and handling of acids. Particularly useful in conjunction with maker's carboy filter.

Features: Pours but does not spill or splash. Ingenious air vent permits



Safety Carboy Drainer

uninterrupted liquid-flow without pumping or siphoning.

Description: Soft rubber neck fits carboys of various sizes. Three sizes are available, for 5, 10 to 13, and 13-gal carboys with 1-3/4 to 2-1/8, 2-3/4 to 3, and 3-1/4 to 3 1/2" necks, respectively.

Vent and spout are hard, durable, acid-proof rubber. All parts are replaceable.

Source: Made by Wahlert Safety Products Corporation, Dept. CP, 25 Lafayette St., Brooklyn 1, N. Y. . . or for more information check CP 2250 on handy form, pages 2 and 3.

Complex lab set-ups  
made easy with  
this support . . .

maneuverable design handy for ring stand or special use

Uses: Laboratory support for special and complex lab set-ups. Also useful as a ring stand, and for other common uses.

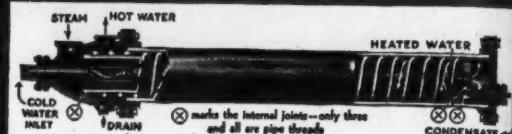
Features: Flexible, and easily manipulated for multiple uses.

Description: Interchangeable legs and bases: 2 bases can be joined with common legs. Legs are movable

**HOT WATER  
LIKE THAT!**



## Johnson "Instant" Heater



Where steam is available, heating water or other liquids is a snap with the Johnson "Instant" Heater. Hook it right up to your high pressure steam lines—it's simple, rugged design eliminates any need for reducing valves. This means *more* heating, and *faster* heating, per unit of length. Years of dependable service have made it industry's favorite—for heating water, oil, and process liquids, for preheating boiler feed water and for booster service. Available with steam chamber of full pipe-thickness copper pipe or with lower cost all steel construction. All sizes, capacities.

Write for Bulletin

**The Johnson Corporation**  
826 Wood St., Three Rivers, Michigan

When inquiring check CP 2251 on handy form, pgs. 2-3

## FILTER BASE HEADQUARTERS

A TYPE FOR  
EVERY NEED

Cotton  
Wool  
Paper  
Nylon  
Vinyon  
Glass  
Asbestos  
Rubber  
Woven Metals  
and special  
types for  
special needs.

**D. R. SPERRY & CO.**  
BATAVIA, ILLINOIS  
Filtration engineers for over 50 years



When inquiring check CP 2252 on handy form, pgs. 2-3

CHEMICAL PROCESSING Preview

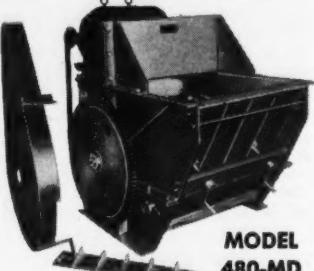
## CRUSH BULK CHEMICALS



AT HIGHER SPEEDS—  
LOWER COSTS

Want to crush your semi-friable and solidified chemicals faster, at less cost, and get exactly the particle sizes you want for processing, bagging and mixing? G-W Breakers handle up to 50 tons per hour, eliminate dusting, minimize loss of materials. Socket-type drum chips off material—adjustable comb plates regulate particle sizes. Picks renewable.

Write today for new Bulletin 482 for complete information.



MODEL  
480-MD

**GIFFORD-WOOD CO.**

NEW YORK 17 Since 1814 CHICAGO 6  
429 LEXINGTON AVE. Hudson, N.Y. 565 W. WASHINGTON ST.

When inquiring check CP 2253 on handy form, pgs. 2-3

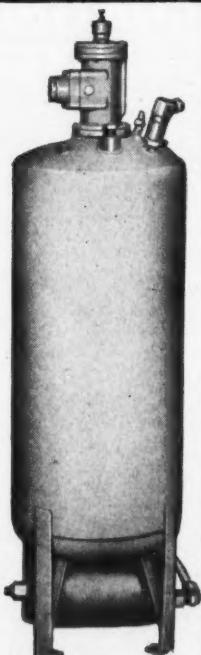
## INSTANTLY COOLS WATER ALCOHOL—OIL

through rapid heat transfer

The exceptionally high capacity of the new Temprite industrial liquid cooler is the result of rapid heat transfer, made possible with the famous Temprite "flooded" cooling principle. A complete system may be installed to cool water, light oils, alcohol and certain chemicals, without the necessity of employing space-consuming storage tanks. For example, the compact 54"-high Temprite will deliver 1185 gallons per hour, reducing the temperature from 60° to 40°.

WRITE FOR BULLETIN  
SINCE 1929

**Temprite**  
PRODUCTS CORP.  
13 PIQUETTE, DETROIT 2

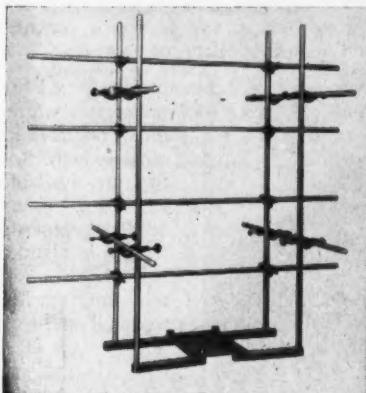


When inquiring check CP 2254 on handy form, pgs. 2-3

## PROCESSING EQUIPMENT

through a 270° arc; all 4 can be folded under base.

For further adaptability, bases and legs are joined by a single cap screw for each leg. Each base has 7, and each leg has 4 threaded 1/2" holes to



Versatile lab support

accommodate rod uprights. Vertical rods are steel, aluminum or brass in 2, 3, 4, 5 and 6' lengths.

Rods can be finger-tightened, and conventional clamps used. Support base is stamped from 1/4" steel plate, furnished in brown Hammerloid baked enamel. The 3/4" square legs are aluminum bar with scratch-brushed finish.

Source: Developed by Precision Scientific Company, Dept. CP, 3737 W. Cortland St., Chicago 47, Ill. . . or for more information check CP 2255 on handy form, pages 2 and 3.

**Filter cloths of special  
fabric handle acids, oils,  
clean easily . . .**

available in range of weaves for use with most types of filters

Uses: For filtration service involving strong mineral acids, common solvents, oils, greases and acid solids.

Features: Bacteria and chemical resistant. High strength-weight ratio even at elevated temperatures. Easy to clean; non-binding and long lasting.

Description: Product is known as Feon Orlon Fabric cloths. These come in a wide range. They are tailored to fit most types of filters, including all rotary filters. Nylon filter cloths are also available for all types of filters and filter presses.

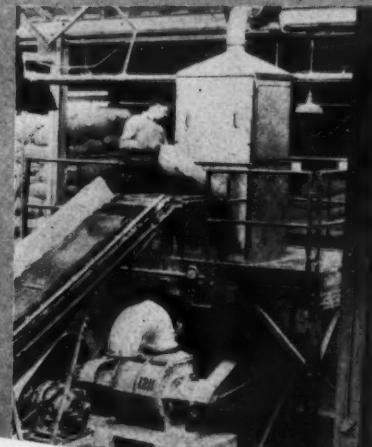
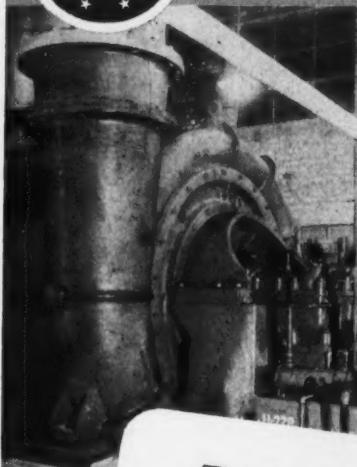
Source: Filtration Engineers Inc., Dept. CP, 155 Oraton St., Newark 4, N. J. . . or for more information check CP 2256 on handy form, pages 2 and 3.



Motor-driven R-C  
Centrifugal Blower,  
24" type OIB, ca-  
pacity 19,600 CPM.

**ROTARY**

Type RCD Rotary Posi-  
tive Blower, used for  
conveying. Capacity  
1,500 CPM.



**R-C dual-ability**  
GIVES YOU straight ANSWERS

Centrifugal or Rotary Positive? Which type of air or gas handling equipment is best suited to your needs? The answer depends upon the specific job—and you'll get the cold, unbiased facts from R-C *dual-ability*.

We can give you this *dual choice* because we build both—and we are the only blower manufacturers who do so. Further, our range of sizes, capacities, pressures and other characteristics is so wide that we can usually match or very closely approximate even exacting specifications.

By such fitting of equipment to the requirements of the job, you get superior performance, dependability and long life from your R-C units—the natural result of 95 years of blower-building experience.

**ROOTS-CONNERSVILLE BLOWER CORPORATION**  
907 Richland Avenue, Connersville, Indiana

# ROOTS-CONNERSVILLE

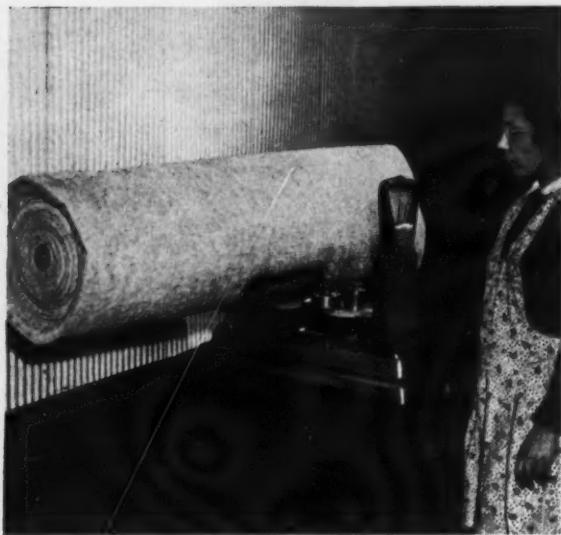
BLOWERS • EXHAUSTERS • BOOSTERS • LIQUID AND VACUUM PUMPS • METERS • INERT GAS GENERATORS

\* \* \* ONE OF THE DRESSER INDUSTRIES \* \*

When inquiring check CP 2257 on handy form, pgs. 2-3



## Tons, Pounds & Ounces — A Major Management Problem . . .



### do it the Exact Weight Way . . .

Does it pay you or cost you to convert tons of raw materials into finished goods? Since many raw materials are delivered by weight management's problem is to guard against waste in handling ingredients and shrink from bulk in volume production packaging. The solution is adequate, tailored to the job industrial scales. They are your best control measures to insure quality, uniformity, accuracy and save labor costs. Every EXACT WEIGHT Scale is designed and built with these things in mind. Today hundreds of thousands of these scales are engaged in reducing costs, diversifying operations and producing goods at a profit for their users. Write for details for your business.

Sales & Service from Coast to Coast



THE EXACT WEIGHT SCALE COMPANY

31 W. Fifth Ave., Columbus 12, Ohio  
Dept. E, 783 Yonge St., Toronto 5, Canada

When inquiring check CP 2258 on handy form, pgs. 2-3

Page 86

## PROCESSING EQUIPMENT

### Centrifuge samples under vacuum at 40,000 rpm . . .

preparative centrifuge features automatic shut-off and speed control; chamber may be refrigerated

Uses: To apply forces of 125,000 g on 150 ml samples, and forces of 60,000 g on samples ranging up to 1100 ml.

Features: Many safety devices and automatic controls simplify operation and reduce spoilage of samples.

Description: Air-cooled, 1 1/2 hp motor is supplied for 115/230 volt operation. Geared drive mechanism whirls rotor, operates in oil-mist bath. Rotors are available in many sizes: smallest rotor is 6 3/4" in diameter, holds 150 ml., and reaches terminal speed of 40,000 rpm in 4 min.; largest rotor has 11" diameter, accelerates to maximum speed of 20,000 rpm in 20 min.

Vacuum chamber centrifuge

Two-stage mechanical pump creates usable vacuum in 5 min.; vacuum chamber is formed by double wall of armor steel. Entire unit, complete with controls, is housed in 25" x 30" x 36" cabinet, as illustrated.

Automatic controls limit motor current during starts, hold running speed to preset values, brake rotor at any pre-selected rate, and shut centrifuge off after any predetermined running time.

Safety devices limit operation to safe speeds for each size rotor, prevent operation unless chamber is evacuated, lock vacuum chamber closed while rotor is operating, and indicate oil level. No water connections are required. Refrigeration facilities within same housing are supplied if specified.

Source: Product of Specialized Instruments Corp., Dept. CP, 657 O'Neill Ave., Belmont, Calif. . . . or for more information check CP 2259 on handy form, pages 2 and 3.

### Cut labor costs by 75% when applying metal jacket to insulated pipe . . .

lightweight, ribbed aluminum can be attached to lines with special all-weather tape

Uses: To protect insulated pipe.

Features: Sturdy aluminum jacket can be applied with special tape, cutting labor costs 75%.

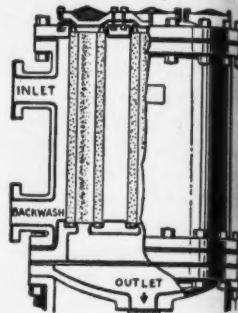
Description: Metal jacketing material is lightweight aluminum, ribbed for extra strength with 3/16" corrugations. Has sufficient flexibility to allow taping to pipe with bands of new plastic film Scotch Tape.

Tape, developed by Minnesota Mining & Manufacturing Co., is designated as No. 471. It stands up indefinitely in all weather without loosening or hardening. Tempera-

## ADAMS PORO STONE FILTERS

### for High-Degree Crystal-Clear Filtering of Corrosive Chemicals CFR (Rubber-lined) CFL (Lead-lined)

Adams Filters are completely enclosed for safety — yet installation is simple and tubes may be inspected or removed without dismantling the filter. All parts in contact with the acid are inert to its action.



Filter tubes are easily and speedily cleaned by back-washing, and may be repeatedly cleaned and used. There is full reclamation of the filtered acid.

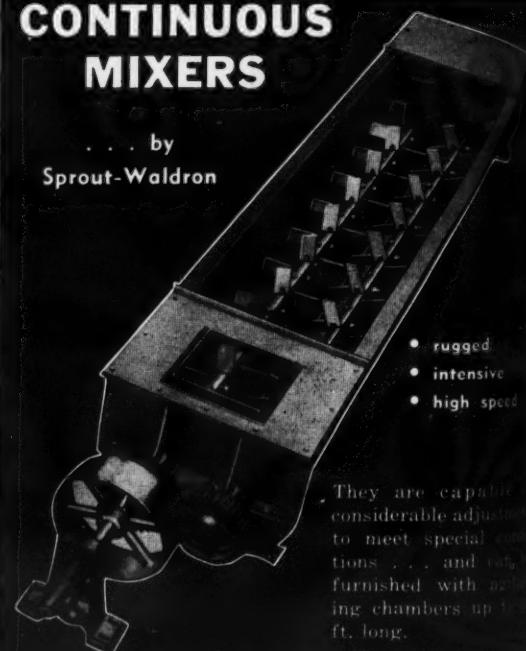
Descriptive Circular 303 gladly mailed. A test in your plant of Poro-stone tubes operating under your actual conditions can be arranged on request.

R. P. ADAMS CO. INC. 243 E. PARK DRIV. BUFFALO 17, N.Y.

When inquiring check CP 2260 on handy form, pgs. 2-3

## CONTINUOUS MIXERS

... by  
Sprout-Waldron



They are capable of considerable adjustment to meet special conditions . . . and are furnished with mixing chambers up to 10 ft. long.

Write for recommendations, today!

SPROUT-WALDRON & COMPANY

Manufacturing Engineers  
MUNCY PENNSYLVANIA

When inquiring check CP 2261 on handy form, pgs. 2-3

CHEMICAL PROCESSING Previous

ures from sub-zero to 170° F do not affect it. Corrosion tests are said to show it highly resistant to acids, alkalies, and most hydrocarbons.

Field tests demonstrate that tape and special aluminum



Flexible metal jacket being applied to insulated pipe with special tape

Insulating material can be applied over insulated lines for less than 6 cents per sq. ft., using \$1.50 per hr. unskilled labor, compared with ordinary labor costs of from 15 to 35 cents per sq. ft.

Source: Childers Mfg., Co., Dept. CP, 625 Yale St., Houston, Tex. . . . or for more information check CP 2262 on handy form, pages 2 and 3.

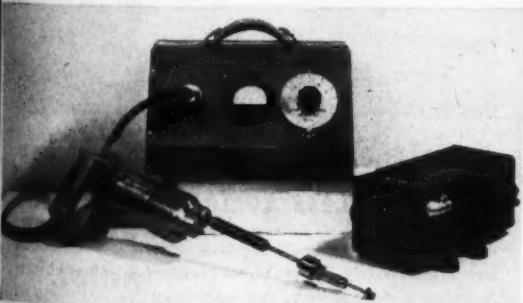
#### Cut tube-expanding time in half, eliminate over-rolling . . .

Electrically-controlled expander shuts off at any predetermined point

Uses: To roll tube ends into tube sheet holes with speed and precision.

Features: Can be operated by inexperienced workers. Prevents over-expanding of tubes, reduces tendency of tube ends to erode.

Description: Complete outfit consists of voltage regulator, precision electronic control, driving motor, and tube



Electrically controlled tube expander cuts rolling time

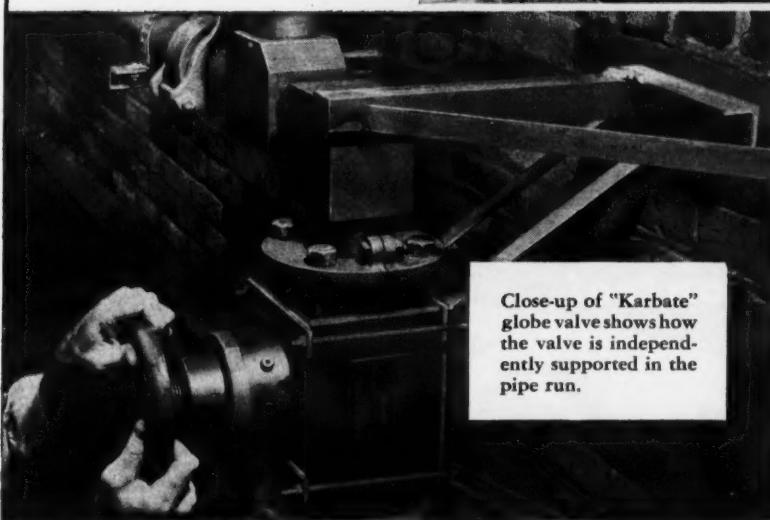
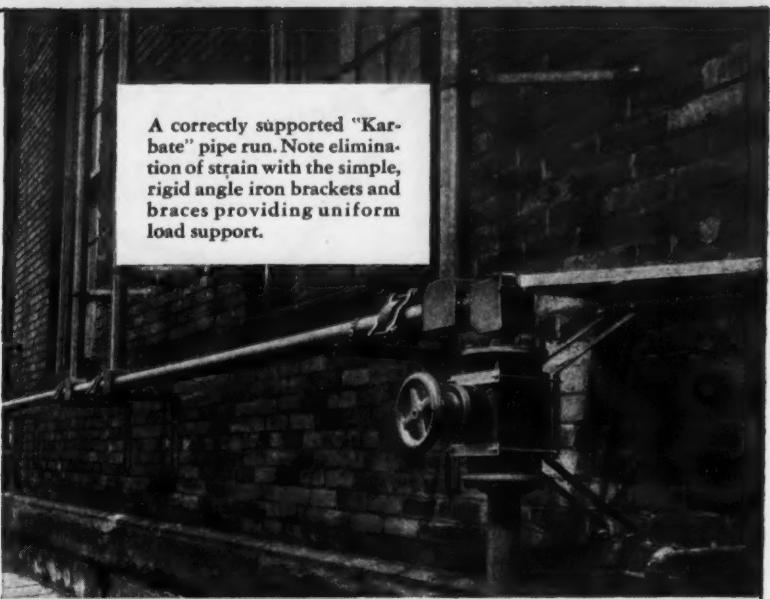
expander. When rolling tubes into place, the control is set at pre-established value for the particular size and gauge of tube, and expander is inserted into tube end. When predetermined rolling point is reached, the driving motor is shut off and the operation is repeated on the next tube.

Ball bearing stop collar rests against tube end, and remains stationary while rolling operation is performed. All thrust load is thus transmitted to expanding rolls, and frictional heating and cutting of tube ends is eliminated.

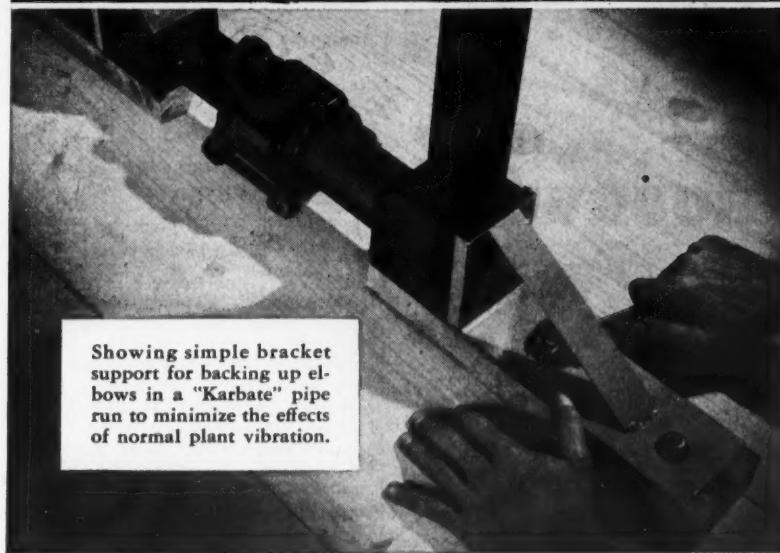
Source: Produced by Crane Packing Co., Dept. CP, 1800 W. Cuyler Ave., Chicago 13, Ill. . . . or for more information check CP 2263 on handy form, pages 2 and 3.

# How to support a "Karbate" pipe line.

A correctly supported "Karbate" pipe run. Note elimination of strain with the simple, rigid angle iron brackets and braces providing uniform load support.



Close-up of "Karbate" globe valve shows how the valve is independently supported in the pipe run.



Showing simple bracket support for backing up elbows in a "Karbate" pipe run to minimize the effects of normal plant vibration.

#### KEEP "KARBATE" PIPE ALWAYS IN STOCK

- Resists the action of acids, alkalies and other chemicals
- Light weight with adequate strength
- Resistant to mechanical shock
- Immune to thermal shock
- Easy to machine and install
- Full range of sizes and fittings

Write for Installation Manual  
M-8801 A. Address Dept. CPP.

The term "Karbate" is a registered trade-mark of  
**NATIONAL CARBON COMPANY, INC.**  
Unit of Union Carbide and Carbon Corporation

**UCC**

30 East 42nd St., New York 17, N. Y.

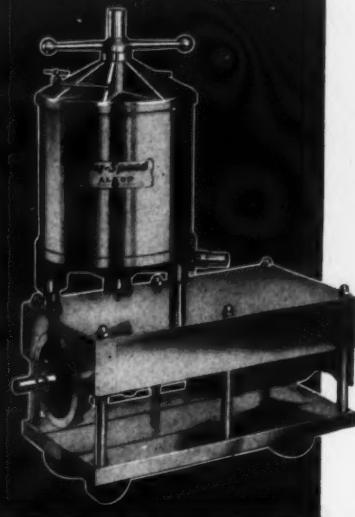
Division Sales Offices:  
Atlanta, Chicago, Dallas, Kansas City,  
New York, Pittsburgh, San Francisco

Foreign Department—New York, U.S.A.

These products sold in Canada by  
Canadian National Carbon Co., Ltd.,  
Toronto 4, Canada

When inquiring check CP 2264 on handy form, pgs. 2-3

# It's an ALSOP FILTER



For  
EASY HANDLING  
and  
POSITIVE RESULTS

## COMPACT, PORTABLE

This Alsop "Sealed-Disc" Filter positively removes all impurities. Its unique design assures unsurpassed performance on intermittent or continuous operation and with little or no supervision. You'll find this compact filter always ready for instant use, completely sealed, leak and drip proof and easy to move to wherever needed.

Alsop Filters of various sizes, made of suitable materials, are at work on chemicals, plating solutions, liquid plastics, liquid soaps, drugs, syrups, foods, beverages, oils, fats, alcohol, water etc. Write for a copy of our NEW CATALOGUE.

**ALSOP**  
ENGINEERING CORPORATION

Filters - Filter Discs & Sheets - Mixers - Agitators  
407 Alsop Square Milldale, Conn.

When inquiring check CP 2265 on handy form, pgs. 2-3

## Accurate Flow Control Quick Shut-Off



## ROCKWELL BUTTERFLY VALVES for Air - Gas - Liquids - Solids

Whether it's by manual control or remote, automatic control, these valves provide efficient, positive, uniform flow regulation at any desired, visible degree of valve opening. When entirely open, valve area is practically as free

as the pipe line itself, without bends or seats to cause undue pressure drop or turbulence.

Construction — of any desired metal. Pipe sizes — to 72". Operating pressures — standard, to 25 p.s.i., special, to 125 p.s.i.

Write for  
Bulletins

W. S. ROCKWELL COMPANY  
220 ELIOT STREET • FAIRFIELD, CONN.

When inquiring check CP 2266 on handy form, pgs. 2-3

## PROCESSING EQUIPMENT

Easy to install, maintain  
these compact, magnetic  
reversing starters . . .

control motor-operated equipment

Uses: Starting and reversing service on polyphase squirrel cage motors in three and four pole forms. For reversing of externally reversible single-phase motors of the four wire-split phase, capacitor or repulsion induction types, the four pole form should be used unless one side of the single phase supply consists of a grounded neutral. In this case the three pole form may be used with the neutral lead run directly to one of the motor terminals.

Features: Compact construction, simplified installation, reduced maintenance and low level pick-up voltages. Ruggedly built for inching, jogging or plug-stop service as well as direct reversing service.

Description: Starters consist essentially of two magnetic contactors, interwired for reversing operation, mechanically interlocked, with or without thermal overload protection. Standard starters have sheet metal N.E.M.A. Type 1 General Purpose Enclosures, but on special order starters can be furnished without enclosures for built-on switchboards.

Starters with three poles are available for across-the-line starting and reversing of polyphase motors to 200 hp., 550 volts, 60 cycles, inclusive. The four pole starters, with ratings of 7½ hp., 550 volts, 60 cycles maximum, are suitable for use with externally reversible single phase motors of the four-wire split phase, capacitor or repulsion induction types.

Source: Ward Leonard Co., Dept. CP, Mount Vernon, N. Y. . . or for more information check CP 2267 on handy form, pages 2 and 3.

## Operate compact cylinders at 1500 cycles per min . . .

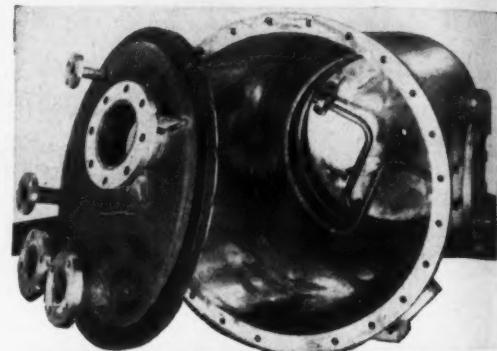
air, hydraulic service cylinders  
have all-steel body parts

Uses: To obtain reciprocating motion from air or hydraulic pressure.

Features: Very compact. All steel body parts, and bearing bronze on all moving surfaces. Ports may be re-oriented without disassembly and without disturbing seals.

Description: Simplified construction eliminates tie-rods; 6" bore cylinders are reported to occupy same space as conventional 4" bore units. Extra large piston rod is one continuous ground and polished shaft. Cylinders may be supplied with self-

**ALLOY FABRICATION**  
STAINLESS STEELS - INCONEL - MONEL  
ALUMINUM - NICKEL AND THEIR CLADS



## TYPE 347 STAINLESS STEEL TANK CODE QUALIFIED? YES!

Twenty-five years of nation-wide stainless steel fabrications have made our prices and deliveries worth your investigation. We would appreciate the opportunity of quoting on your requirements.

**ALLOY MANUFACTURING COMPANY**  
HORNING AND CURRY ROADS PITTSBURGH 27, PA.

Telephone CARick 9150

When inquiring check CP 2268 on handy form, pgs. 2-3



## New Type Chemical Extruder Assures Less Compact Material

In this modern "National" machine, a new wiping motion leaves the extruded material *less compact* . . . in better form for subsequent handling, and permitting the extruding of numerous materials that previously could not be processed. Automatic loading synchronized with extrusion operation. Designed for continuous tray or apron drying. Furnished in various sizes and capacities, and any required metal.

Write for Complete Information.

Chemical Dryers of  
All Types and Sizes



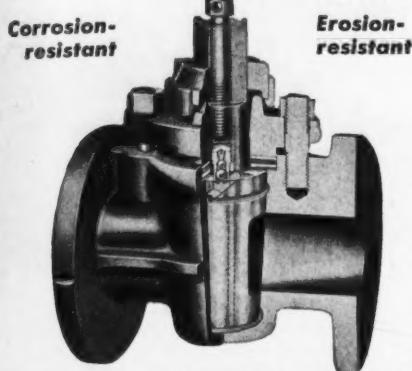
Special Drying and  
Heating Equipment

**THE NATIONAL DRYING MACHINERY CO.**  
2709 N. Hancock Street, Philadelphia 33, Pa.

When inquiring check CP 2269 on handy form, pgs. 2-3

CHEMICAL PROCESSING Preview

# Nordstrom LUBRICATED VALVES



## LUBRICATED FOR TROUBLE-FREE SERVICE

Lubricant under pressure performs triple function — lubricates plug, forms seal around each port and jacks plug. Streamlined interior. Will not clog. Seat is unexposed to line contents. Available in semi-steel, Nordco steel, stainless steel, bronze and special alloys. Keep upkeep down. Use genuine Nordoseal lubricants. Request descriptive literature.

### NORDSTROM VALVE DIVISION—ROCKWELL MANUFACTURING CO.

400 N. Lexington Ave.  
Pittsburgh 8, Pa.  
Export Representatives:  
Rockwell International Corp.  
Empire State Bldg., New York



Atlanta, Boston, Chicago  
Houston, Kansas City, Los Angeles,  
New York, Pittsburgh, San Francisco,  
Seattle, Tulsa.  
—and leading Supply Houses

When inquiring check CP 2270 on handy form, pgs. 2-3

## for those HIGH VACUUM jobs

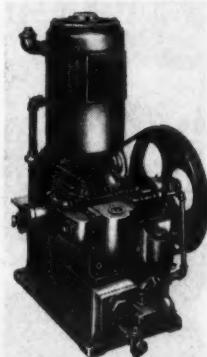
For such high vacuum processes as distilling, extracting, drying, impregnating, filling, packing, etc. —you need the pump that produces the much needed, sustained high vacuum—in the low micron range—with high mechanical efficiency.

That's what you may expect and consistently get from Beach-Russ Rotary Piston Pumps:

- 1—Positive rotary motion at only 200 RPM without gears or springs yet—
- 2—High speed evacuation,
- 3—High volumetric efficiency and
- 4—Practically noiseless operation.

Thousands of these dependable pumps on wet or dry processes tell their success story. Available in sizes from 17 to 845 c.f.m. —in corrosion resistant metals, if required—for pressures within 10 microns blank flange.

Write for  
Catalog No. 84.



BEACH-RUSS  
ROTARY PISTON  
HIGH VACUUM  
PUMPS

BEACH-RUSS COMPANY  
46 CHURCH ST., NEW YORK 7, N.Y.

When inquiring check CP 2271 on handy form, pgs. 2-3

JULY, 1949

## PROCESSING EQUIPMENT

regulating or adjustable cushions without adding to overall dimensions.

Available in bore sizes from 1 1/2" to 8", cylinder may be operated at speeds to 1500 cycles per minute continuous duty. Interchangeable mounting brackets may be applied to the cylinders without disassembly.

Supplied in many models, with two types: first for 150 psi air or 500 psi hydraulic service, second for 500 psi air or 1500 psi hydraulic service.

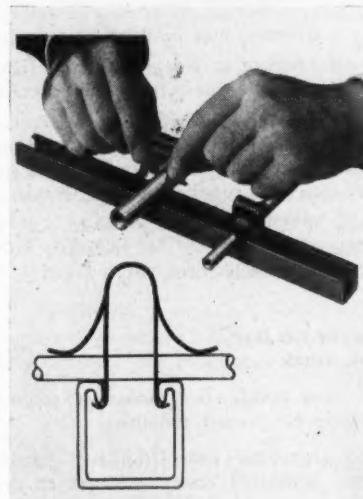
Source: Produced by Ortmann-Miller Machine Co., Inc., Dept. CP, Hammond, Ind. . . . or for more information check CP 2272 on handy form, pages 2 and 3.

### Easy way to rack tubing of 3/16 to 1" OD . . .

spring-steel clamp holds firmly yet permits fast change

Uses: Spring-steel tubing clamp for use with maker's slotted steel channel, accommodating 3/16 to 1" OD tubing sizes. To rack tubing.

Features: Permits fastening each tube individually, allowing for its speedy respacing, relocation or removal. Holds tubing firmly in place



Tubing clamp

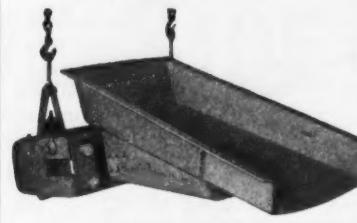
despite expansion or contraction, yet adjusts quickly and easily where a change in tube mounting position is necessary.

Description: Mounts or hangs in any position. When two pieces of channel are spot-welded back-to-back, tubing can be racked on both sides.

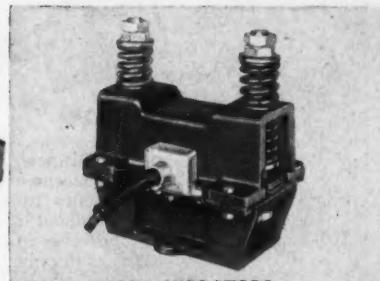
Source: Unistrut Products Company, Dept. CP, 1013 W. Washington St., Chicago, Ill. . . . or for more information check CP 2273 on handy form, pages 2 and 3.

# SYNTRON

## Speeds Up Material Handling!



"Vibra-Flow"



BIN VIBRATORS  
Make Stubborn Materials Flow Freely

## VIBRATORY FEEDERS

With capacities of from ounces to hundreds of tons per hour.

— of bulk materials — hot or cold — dry or damp — from fine powders to big lumps — to crushers, grinders, belt conveyors, driers.

— at controlled rates, through a number of settings on the dial rheostat or reactor — from a trickling dribble to a gushing torrent — either manually or automatically.

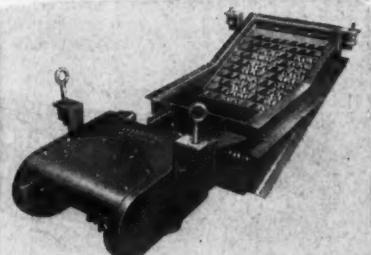
No motors, gears, belts, pulleys, etc.

Write for illustrated folder

SYNTRON CO.  
110 Lexington, Homer City, Pa.



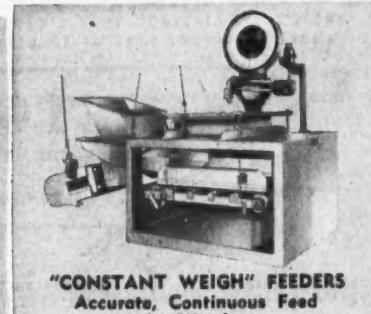
PACKERS and JOLTERS  
Electric-Hydraulic-Pneumatic



VIBRATING SCREENS  
Wet or Dry — Single or  
Multiple Decks



"Automatic" BATCH WEIGHING  
Scale—Controlled Vibratory Feeders



"CONSTANT WEIGH" FEEDERS  
Accurate, Continuous Feed  
by Weight

When inquiring check CP 2274 on handy form, pgs. 2-3

# This DIAL replaces HUMAN JUDGMENT



TAKE  
GUESSWORK  
OUT OF  
TUBE  
EXPANDING

The AIRETOOL FISHER Electric Tube Rolling  
Control eliminates over and under expansion

For information and literature  
write The AIRETOOL Manufacturing Co., 308 S. Center St.,  
Springfield, Ohio.

THERE'S AN AIRETOOL TUBE CLEANER AND TUBE EXPANDER FOR EVERY TYPE OF TUBULAR CONSTRUCTION.



BRANCH OFFICES: NEW YORK, PHILADELPHIA, CHICAGO, HOUSTON,  
TULSA, BATON ROUGE. REPRESENTATIVES IN PRINCIPAL CITIES.

When inquiring check CP 2275 on handy form, pgs. 2-3

Page 90

## PROCESSING EQUIPMENT

Collect extremely fine particles,  
smaller than .01 micron, with  
ultrasonic generator . . .

high intensity sonic energy agglomerates fines of any chemical, physical, or electrical nature

Uses: To make possible collection of extremely fine particles. Dusts, fumes, and mists may be agglomerated and then collected in conventional cyclone equipment. Also used for making or breaking emulsions, performing quick and intimate mixing, etc.

Features: Temperature of gas being treated may vary from below 0°F to over 900°F. Inflammable gases and fines may safely be treated by operating generator on inert or cleaned process gas.

Description: Explosion-proof, 12,500 rpm, 1.5 hp motor is mounted directly on generator. Produces over 300 watts of acoustic output over lower portion of range, from 500 to 5000 cycles. Output decreases to 200 watts at maximum frequency of 22,000 cycles.

This data is obtained with 5 psi air pressure at the generator. Higher outputs are reported with higher pressures at the generator.

Designed for use in agglomeration tower before a cyclone or other conventional collector, these generators stand only 28" high, have a net weight of 120 lbs. Variac speed control and a frequency meter are supplied with generator.

Source: Produced by Ultrasonic Corp., Dept. CP, 61 Rogers St., Cambridge 42, Mass. . . . or for more information check CP 2276 on handy form, pages 2 and 3.

Cold moisture layer no bar  
to permanent ink mark . . .

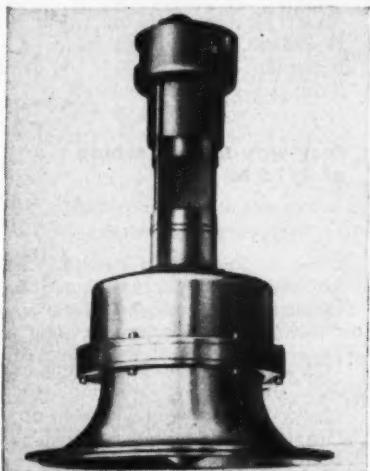
stamp-pad ink dries smudge-free within 30 seconds; mark sticks tightly on thawed containers

Uses: Marks on aluminum foil, laminated glassine, waxed locker paper, laminated cellophane, polyethylene plastic, glass, metals.

Features: Stamps through any amount of condensation, on moist, cold, frozen, wet or dry surfaces. Waterproof and frostproof marking does not smudge even after package thaws. Quick-drying: may be lightly rubbed without smudging within 30 seconds after stamping.

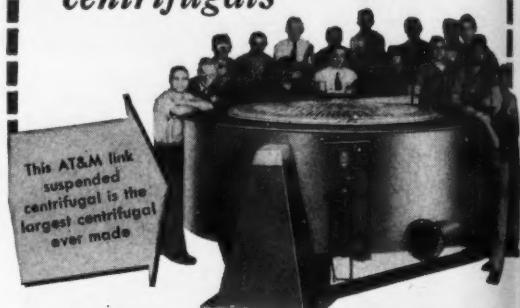
Description: Several tests have been performed on different surfaces marked with Vaporite No. 36 stamp pad ink. In one, metal cans were stamped and placed in zero-degree storage boxes for 3 weeks. At the end of that time, a pen knife had to be used to dislodge the marking.

Strips of aluminum foil, polyethylene, laminated cellophane and waxed paper were submerged under a stream of running water and stamped. Perfect imprints were



Generates high intensity sonic energy

**SAVE time, space  
and costs with AT&M  
centrifugals**



This AT&M link  
suspended  
centrifugal is the  
largest centrifugal  
ever made

Does separation, extraction, dehydration, clarification, coating, filtration, draining, thickening or sedimentation enter into your processing? If so, you'll find that an AT&M Centrifugal, large or small, will do it faster and better at lower unit costs. Made in all machinable metals, AT&M Centrifugals are available with fume-proof hoods, free-wheeling drives, removable baskets, spray pipes and many other AT&M special features designed to solve specific problems. Why not send us a sample of your material for confidential analysis and recommendation . . . without cost or obligation? American Tool and Machine Company, 1425 Hyde Park Ave., Boston 36, Mass.

SAVE TIME, SPACE AND COSTS WITH  
**A.T. and M.  
CENTRIFUGING**

When inquiring check CP 2277 on handy form, pgs. 2-3

*Solve your Ventilating  
Problems with*

**INTERNATIONAL**

**DUCT BOOSTERS  
STACK FANS  
AND BLOWERS**



**DUCT BOOSTER**

If you have a problem of  
forced draft or ventilation,  
send for descriptive liter-  
ature showing typical  
installations in ships and  
industrial plants,  
apartment houses  
and public buildings.

ASK FOR BULLETIN NO. 102

**STACK FAN**

**INTERNATIONAL ENGINEERING INC.  
DAYTON 1, OHIO.**

NEW YORK, 15 PARK ROW—CHICAGO, 407 S. DEARBORN

When inquiring check CP 2278 on handy form, pgs. 2-3

CHEMICAL PROCESSING Preview

## PROCESSING EQUIPMENT

obtained, with ink setting almost immediately. Smudging was only slight when materials were instantly removed from the running water.

Illustration with this article shows another test. Here, the ink was applied to aluminum foil laid on a cake of ice. Even though a heavy film of moisture was on the foil, the ink adhered perfectly after drying and setting for approximately 30 seconds.



Stamping markings on moist aluminum foil on ice cake

Although the ink will stamp through water, it is recommended that frost be wiped from area to be marked.

Source: Product of Time-Saving Specialties, Dept. CP, 706 New York Life Bldg., Minneapolis 2, Minn. . . . or for more information check CP 2279 on handy form, pages 2 and 3.

### Cartridge heater "pigtails" locked in unbreakable sealing cement . . .

improved construction increases durability, contributes to longer service life

Uses: Greatly increased moisture resistance extends usual list of applications.

Features: Pigtails are locked in heater head by an especially hard cement seal that is virtually unbreakable. Opposite end of the unit is brazed on.

Description: The pigtails are made of a nickel clad stranded copper covered wire with a silicon impregnated glass sleeving. Improved construction also includes new multiple-pass porcelain core, which positively locates heating coil in relation to metal shell, and provides much greater space for heating-element wire. This reduces in-



Cartridge heater features new style pigtails

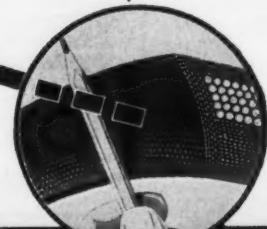
ternal watts per sq. inch and prolongs life of the heater. Catalog 74-T illustrates and describes the heater in detail.

Source: Trent, Inc., Dept. CP, 235 Leverington Ave., Philadelphia 27, Pa. . . . or for more information check CP 2280 on handy form, pages 2 and 3.

JULY, 1949

This Simple Test  
Shows Exactly How

# The CONCAVE SIDE (U.S. Patent No. 1813698) Saves You Money!



Pick up any V-belt having the ordinary straight sides and bend the belt. Three things will happen, right before your eyes.

(1) The top of the belt is under tension and grows narrower. (2) The body, under compression, becomes wider. (3) The sides of the belt bulge out. (Figures 1 and 1-A, below.)



Straight-Sided V-Belts



How Straight-Sided V-Belt Bulges in Sheave-Groove

This bulging of the straight-sided V-belt in its sheave-groove costs you money in two ways—(1) The bulge causes uneven sidewall wear—shorter life! (2) The bulging side cannot evenly grip the wall of the sheave groove—a loss in transmission efficiency!

In figures 2 and 2-A, you see how the precisely engineered concave side of the Gates Vulco Rope exactly corrects this bulging.



Gates Vulco Rope with Concave Side



No Side Bulge. Precise Fit in Sheave-Groove.

Two distinct savings result. (1) The Gates Vulco Rope wears evenly—longer life! (2) The entire side-wall grips the pulley—carries heavier loads and sudden load increases without slippage—saves belts and also saves power!



REG. U. S. PAT. OFF.

The Mark of SPECIALIZED Research

### The Concave Side is MORE IMPORTANT NOW Than Ever Before

Because the sides of a V-Belt are what actually drive the pulley, it is clear that any increased load on the belt means a heavier load that must be transmitted to the pulley directly through the belt's sidewalls.

Now that Gates SPECIALIZED Research has made available to you SUPER Vulco Ropes—carrying fully 40% higher horsepower ratings—the life-prolonging Concave Side is naturally more important in conserving belt life today than ever before.

**GATES VULCO ROPE DRIVES**  
Engineering Offices . . . 2100 Ogallala Street, Chicago 16, Illinois  
Sales Offices . . . 2100 Ogallala Street, Chicago 16, Illinois  
IN ALL INDUSTRIAL CENTERS

**THE GATES RUBBER COMPANY**

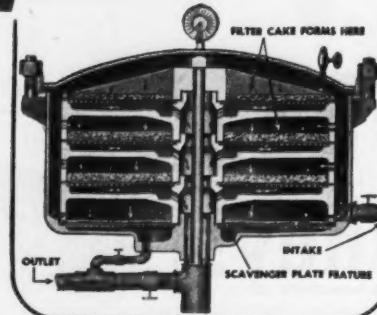
DENVER, U. S. A.

The World's Largest Makers of V-Belts

When inquiring check CP 2281 on handy form, pgs. 2-3

# Why

## Horizontal Filter Plates?



**because**—with horizontal plates, filter aids are permitted to flow in a natural direction, with gravity, and are deposited in an even cake of uniform thickness.

**because**—the filter cake rests flat on the supporting plate without tensile or distortive strain, will not crack, slip, or break under pressure, assuring even filtration.

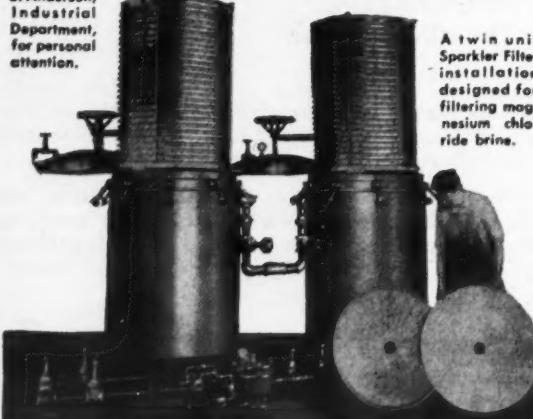
**because**—any filter paper, cloth, screens, or filter media can be used. Strength in the cake itself is not important, pressure simply presses the cake more firmly on the supporting horizontal plate.

**because**—horizontal plates are bolted together in a unit that is easily removed for cleaning. An extra unit assembly of horizontal plates can be immediately placed in the filter and the filtering process continued with slight interruption.

This is only part of the story—other exclusive features like the patented scavenger plate that makes possible the recovery of the last of a batch run and other operating advantages are reasons why Sparkler Horizontal Plate Filters are so widely used in the chemical processing industry.

### SPARKLER horizontal plate FILTERS

Our filtration engineers are ready to cooperate in solving any of your filtering problems. Write E. S. Anderson, Industrial Department, for personal attention.



**SPARKLER** Manufacturing Co.

220 Lake Street, Mundelein, Ill.

When inquiring check CP 2282 on handy form, pgs. 2-3

Page 92

### PROCESSING EQUIPMENT

**Packaged unit delivered ready to apply chromium and other types of plating . . .**

has lead-lined tank; blower exhausts fumes and cools copper oxide rectifiers

**Uses:** Designed primarily for all types of chromium plating, but can be used on other metals besides chromium, when the standard lead-lined tank is suitable. (Plain steel, rubber-lined or other types of construction can be supplied with special units.)

Especially suitable in small shops, the machine lends itself to departmental plating service in larger plants, and for special plating operations, including pilot plant and development investigations.

**Features:** This is a complete plating unit, fully wired and ready for operation. Delivers any required amperage up to 300, under precision control of amperage and temperature.

**Description:** Cro-Plater is made in one standard size, with a 45-gallon lead-lined Armc iron tank, 24" x 18" x 30". Tank is electrically heated by a thermostatically-controlled unit located at outside and bottom of tank.

A 220-volt, 3-phase, 60-cycle, 50-ampere input is required. A bank of six force-cooled copper oxide rectifier stacks delivers up to 300 amperes, at 1 to 15 volts, for the plating operation.

Multiple units of the Cro-Plater will take care of most needs for volume production in small and medium-sized plants. Larger units, based on the same principle of design, can be supplied as specially engineered jobs.

Accessory equipment of various kinds is available, including a vapor degreaser unit for removal of organic dirts, and a cleaning unit for removal of inorganic salts and solid dirts.

**Source:** W. S. Rockwell Co., Dept. CP, 200 Eliot St., Fairfield, Conn. . . . or for more information check CP 2283 on handy form, pages 2 and 3.

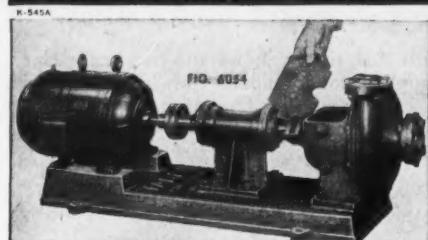
**Chlorination of plant water can be put under any type of control . . .**

air-operated system of chlorinator provides for smooth operation, sensitive response

**Uses:** Mixes chlorine gas with water in desired proportion, and applies precisely-controlled solution to kill bacteria. Used on water supplies of municipal water works and sewage works, and in cooling and processing water circuits of chemical plants, paper mills, oil refineries and power stations.

**Features:** Critical working parts are under glass bell jar, visible to operator at all times. All parts are readily accessible. Air pilot operation gives quick response to

**NO AIR LEAKAGE**  
thru stuffing box into vacuum



For handling chemical solutions, Taber Pumps are equipped with a drip chamber and cover. When in vacuum service on evaporators, the water-filled drip chamber prevents air from entering thru the packing. This water-sealing of the stuffing box is absolutely dependable.

Taber Single Suction Centrifugal Pumps are as adaptable as they are efficient.

For complete information, please write on your letterhead for  
**TABER SPECIAL BULLETIN CL-339**

TABER PUMP CO. • Est. 1859 • 268 ELM ST., BUFFALO 3, N.Y.

**TABER** Higher Practical Performance **PUMPS**

When inquiring check CP 2284 on handy form, pgs. 2-3



### SPRACO NOZZLES

Write for NOZZLE CATALOG to

**SPRAY ENGINEERING CO.**  
125 CENTRAL STREET • SOMERVILLE 45, MASS.

When inquiring check CP 2285 on handy form, pgs. 2-3

CHEMICAL PROCESSING Preview

GE  
JUM  
3, N.Y.  
PS  
pgs. 2-3  
view

for GREATEST DEPENDABILITY and EFFICIENCY  
in metered pressure pumping of  
**SULPHURIC ACID**  
...at all concentrations

Pumps against line pressure . . . meters accurately . . . has no stuffing box, so eliminates leakage, prevents corrosion of pump or contamination of product, avoids loss of prime . . . lowest maintenance . . . Hundreds of satisfactory installations.

- NO STUFFING-BOX OR RUNNING SEAL
- POSITIVE DISPLACEMENT PISTON MEASUREMENT
- FLOW RATE ADJUSTABLE WHILE IN OPERATION
- MANUAL OR AUTOMATIC CONTROL

Lapp

**PULSAFEEDER**

PISTON-DIAPHRAGM CHEMICAL PROPORTIONING PUMP

WRITE for Bulletin 262 with complete description and specifications.  
LAPP INSULATOR CO., INC., PROCESS EQUIPMENT DIVISION, 128 MAPLE STREET, LE ROY, N.Y.

When inquiring check CP 2286 on handy form, pgs. 2-3



**with PRUFCOAT**

Yes, this modern synthetic resin protective coating has a ten year record now of standing up where ordinary paints fail — in major chemical manufacturing plants throughout the country as well as those employing chemical processes. On walls, ceilings, floors, pipes, vats, ducts and machinery — in the presence of strong corrosives like caustic soda, sulphuric, nitric and phosphoric acids — Prufcoat saves money because it lasts longer, gives better protection.

Get *Proof* BEFORE YOU BUY . . .

Write for new *Prufcoat Proof Pack*. It contains in one easy-to-file folder reports from outside testing laboratories, actual case histories, and *Prufcoat Protecto-graph* Plan for analyzing your own painting maintenance costs. Write *Prufcoat Laboratories, Inc.*, 63 Main St., Cambridge 42, Mass.

**SAVES More because it PROTECTS More**

**8 Attractive Colors**

**Proof against Acids, Alkalies, Oil, Water**

When inquiring check CP 2287 on handy form, pgs. 2-3

JULY, 1949

**PROCESSING EQUIPMENT**

changes in feed rate; delivery of chlorine across fixed orifice is within 4% of indicated rate. Can be operated under any type control, from manual to fully automatic proportional flow. Optional alarm calls attention to start-up or shut-down in remote location.

**Description:** Chlorine pressure-reducing valve, actuated by air pressure through power unit, controls flow of chlorine entering machine and thereby regulates vacuum on upstream side of metering orifice. This orifice measures rate of gas flow, indication of such flow being given by manometers and scale.

Chlorine, after passing through the orifice, goes through a meter vacuum control valve and thence to an injector where it is mixed with water and dispensed to system. Injector is ejector type in which flow of water through restricted throat creates vacuum in side port. Vacuum is transmitted to chlorinator through connecting line.

The meter control valve, also actuated by power unit, regulates vacuum on downstream side of metering orifice, thus producing differential across orifice necessary to feed desired amount of chlorine.

Materials of construction are completely resistant to moist chlorine gas. Units are housed in heavy-gauge sheet steel and plastic semi-panel-type pedestal. Pressure-reducing valve and metering orifice are reached simply by removing glass bell jar. All other parts are reached through open back of pedestal or through doors that open on front of pedestal.

Control handles, pressure gauges, etc., are on front of pedestal. Air lines, power units, gauges and auxiliary water devices are protected by easily-cleaned strainers and convenient shut-off valves. Injector is constructed to resist erosion of high-velocity water-flows as well as corrosion of moist chlorine gas.

The Air-operated Master chlorinator handles from  $1/2$  lb to 6000 lbs of chlorine daily. Range for any one interchangeable meter is 7 to 1. Eleven standard meters have maximum capacities ranging from 400 to 6000 lbs per 24 hrs. Meters covering lower ranges are available.

**Source:** Product of Wallace & Tiernan Co., Inc., Dept. CP, Box 178, Newark, N. J. . . or for more information check CP 2288 on handy form, pages 2 and 3.

**Efficient control of compressor, sump, and other pumps**

Thirty-seven pages of engineering data outline systems of control for compressor pumps, small and large sump pumps, and many other pumps used in water systems.

"Precision Control for Pumps", issued by Cutler-Hammer, Inc., Dept. CP, 331 No. 12th St., Milwaukee 1, Wis. When inquiring specify CP 2289 on handy form, pages 2 and 3.

Every part made by Ampco Metal, Inc. of corrosion-resistant Ampco Metal — for longer life, fewer replacement costs

- 1 Formed Sheet — Ampco Grade 8
- 2 Sheet — Ampco Grade 8
- 3 Formed Plate — Ampco Grade 8
- 4 Centrifugal Casting — Ampcoloy A3
- 5 Extruded Tubing — Ampcoloy 49
- 6 Sand Casting — Ampcoloy A3
- 7 Extruded Rod (Studs) & Bolts — Ampcoloy 49

— and the complete assembly is welded with corrosion-resistant Ampco-Trode 160 easy to use electrodes.



**Ampco Metal  
specified for every part  
because of  
proven corrosion-resistant  
performance**

In every industry where corrosion and abrasion is a cost problem, Ampco Metal has proven its ability to reduce down time. Whether it is used for individual parts or in complete fabricated assemblies (as illustrated above), this corrosion- and abrasion-resistant aluminum bronze has cut replacement costs to a minimum!

In addition to its superlative resistance to corrosion and abrasion, Ampco Metal gives you other outstanding service qualities: It is a series of alloys which has

high tensile strength, exceptional wear-resistance, controlled hardness, and the ability to withstand shocks, heavy loads, and abuse.

Ampco Aluminum Bronze Alloys have proved their economy in such diverse fields as: chemical plants, packing plants, paper mills, oil refineries, breweries, steel mills, marine service, and more.

Ask your nearby Ampco Field engineer for complete information on our fabricating, foundry, mill, and machine-shop facilities. Specify Ampco Metal on all jobs.

free  
Information  
on Ampco  
Aluminum  
Bronze Alloys



**Ampco Metal, Inc.**  
Milwaukee 4, Wisconsin

West of the Rockies, it's the Ampco West Coast Plant, Burbank, Calif.

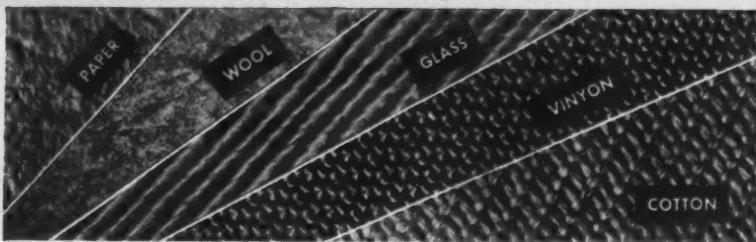
Tear out this coupon and mail today!

AMPCO METAL, INC., Dept. CP-7,  
Milwaukee 4, Wisconsin  
Please send me Bulletin 52, "AMPCO METAL in Acid-Resistant Service."

Name \_\_\_\_\_ Position \_\_\_\_\_  
Company \_\_\_\_\_  
Company Address \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_

When inquiring check CP 2290 on handy form, pgs. 2-3

Page 93



## SHRIVER FILTER MEDIA

Any Kind — Any Weave — Any Quantity  
in Rolls or Cut and Sewn to Size

We stock a large supply of cotton filter cloths in all weaves, weights and widths and can make prompt shipment in rolls or cut, hemmed, punched, preshrunk or otherwise finished to specifications.

We can also supply filter paper of any type, weight and texture in discs or sheets, of any size or shape for any filter.

Other filter media such as vinyon, nylon, saran, wool, asbestos, glass or wire cloth are also available.

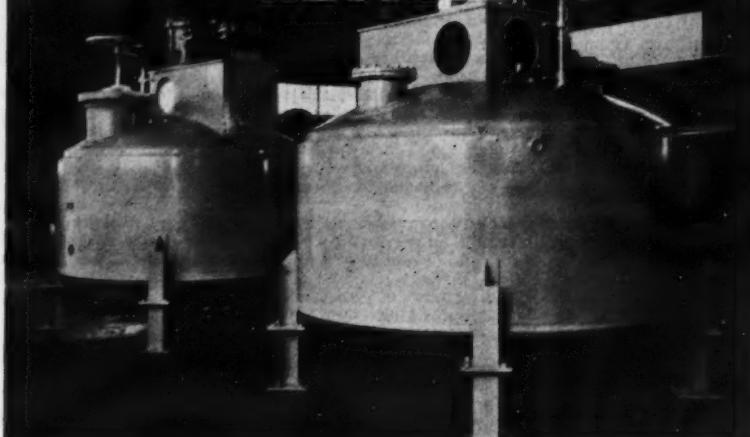
Write for Bulletin 123 and sample of the kind of medium you need.

T. SHRIVER & COMPANY, Inc.  
846 Hamilton St. Harrison, N.J.

FILTER PRESSES • FILTER MEDIA  
ENCLOSED PRESSURE FILTERS  
CONTINUOUS THICKENERS  
DIAPHRAGM PUMPS

When inquiring check CP 2291 on handy form, pgs. 2-3

## AGITATED JACKETED KETTLES



LEADER BUILDS  
TANKS — KETTLES — FRACTIONATING COLUMNS  
HEAT EXCHANGERS and SPECIAL EQUIPMENT  
OF  
STEEL — STAINLESS STEEL — NICKEL — MONEL  
INCONEL — COPPER — EVERDUR — HERCULOID  
HASTELLOY — ALUMINUM and CLAD STEELS

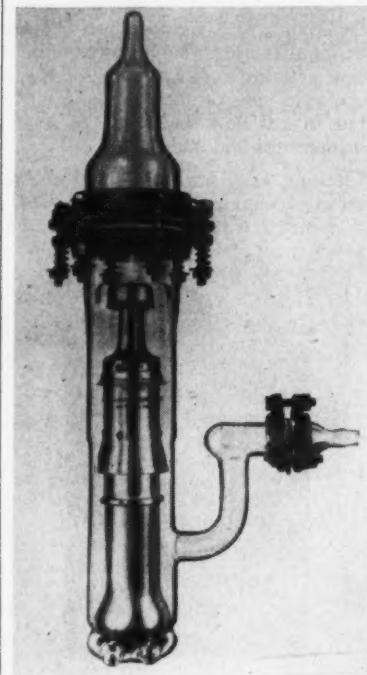
LEADER IRON WORKS, INC.  
2100 N. JASPER DECATUR, ILLINOIS

When inquiring check CP 2292 on handy form, pgs. 2-3

## PROCESSING EQUIPMENT

Simple pump attains  
high vacuum . . .

oil-diffusion pump has speeds to  
67 liters per sec.



Simple oil diffusion pump

Uses: To evacuate any enclosure to vacuum<sup>s</sup> ranging down to  $4 \times 10^{-7}$  mm Hg.

Features: Simple design, easily installed. Requires no charcoal trap.

Description: Originally designed by manufacturer for evacuation of vacuum tubes. Evacuation speeds range up to 67 liters per second. Pump has clear glass barrel, requires no cooling.

Source: Eitel-McCullough, Inc., Dept. CP, San Bruno, Calif. . . . or for more information check CP 2293 on handy form, pages 2 and 3.

Pumps oil or water  
hydraulically to  
30,000 psi . . .

operates on 100 psi air supply;  
permits rapid ram-travel

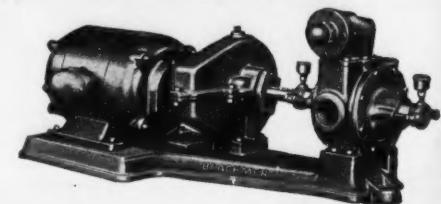
Uses: Hydraulic boost pump, with or without power unit, for oil or water service. For operation on 100 psi plant air supply, providing hydraulic pressures from 1000 to 30,000 psi.

For various press applications, clamping, shearing, static testing, jacks, pullers, metal-forming.

Features: Permits rapid ram-travel to desired tonnage, and return, in a matter of seconds. Capable of replacing hand-operated types on most installations.

## YOUR NEXT MOVE toward Greater Plant Efficiency

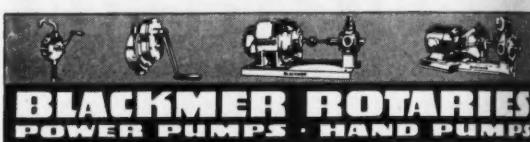
BLACKMER *Rotary* PUMPS  
STANDARD CONSTRUCTION  
FOR PROCESSING INDUSTRIES



SELF-  
ADJUSTING  
FOR WEAR

Blackmer Rotary Pumps for 5 to 10 g.p.m. requirements prove the lower operating costs in thousands of industrial installations. See how Blackmer cuts liquid handling costs —

Write For Bulletin 307  
"FACTS ABOUT ROTARY PUMPS"  
BLACKMER PUMP COMPANY  
GRAND RAPIDS  
MICHIGAN



When inquiring check CP 2294 on handy form, pgs. 2-3

Engineered to Your needs



2 to 20 TIMES FASTER  
Than Conventional Mixers

Saving up to 46½ hours per cycle—at rates 2 to 20 times faster than conventional mixers—the Cowles Ultra-Fast Dissolver is an engineered product, not a standardized machine. It can be adapted to meet a wide variety of conditions. In fact, all Cowles Dissolvers are more or less engineered to the job in that speed, horsepower, impeller and chemical inertness of tank are adjusted to the gallonage, viscosity, physical and chemical properties of the materials you have to process.

LET US DEMONSTRATE. In every case on record—either dissolving or dispersing—the Cowles Dissolver has consistently outperformed conventional mixers, cutting operating cycles to a minimum that is difficult to believe. Yet the result is achieved with a simple mechanism that applies classical physical laws. Incredulous? Don't be. Let us demonstrate on your materials. No cost. No obligation. Simply write or wire.

The Cowles Company  
INCORPORATED  
37 TRACKSIDE, CAYUGA, N.Y.  
Associate: Alexander Fleck, Ltd., Ottawa, Ont.

When inquiring check CP 2295 on handy form, pgs. 2-3

CHEMICAL PROCESSING Preview

## Fiber Users

WRITE FOR DATA AND SAMPLES

### SILVACEL

#### WHOLE WOOD FIBER

A New Product of Weyerhaeuser Development

A LOWCOST PRODUCT available for immediate shipment in carload quantities from a constant uniform supply of raw material.

COMPLETE RANGE OF FIBER SIZE AND TYPE from coarse fiber bundles to fine ultimate fiber—felting or non-felting. Let us select the exact size and type to meet your use requirements.

NATURAL OR TREATED with most any material you specify—complete and uniform coverage of each individual fiber.

Investigate the many uses for SILVACEL Whole Wood Fiber; filter paper, oil well drilling, insulation, plastics, rubber products, paper board, fibrous fillers. Generous samples of SILVACEL sent on request. Write to Weyerhaeuser Timber Co. Development Dept., Longview, Washington.

A PRODUCT OF Weyerhaeuser DEVELOPMENT

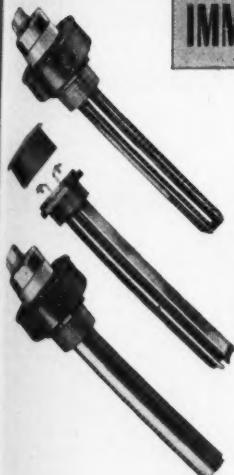
### SILVACEL

BUILDING AMERICA'S FORESTS FOR AMERICA'S FUTURE

pgs. 2-3 When inquiring check CP 2296 on handy form, pgs. 2-3

Why

### DO SO MANY MANUFACTURERS USE Trent? IMMERSION HEATERS?



The answer is plain—easily demonstrated proof of the greater efficiency, economy and durability of Trent design and construction.

Nichrome heating elements are permanently positioned in relation to casing, in heavy gauge molded refractory. Low wattage per square inch assures longer heater life. All styles have brass heads with standard N. P. T. For hot water tanks, water baths, coffee urns, etc. Range—300 to 9,000 watts.

Send for Bulletin 74-T and other literature describing Trent ovens, furnaces, etc.

**TRENT** INC

Electrically Heated Industrial Equipment  
215 LEVERINGTON AVE. PHILA. 27, PA.

When inquiring check CP 2297 on handy form, pgs. 2-3

JULY, 1949

## PROCESSING EQUIPMENT

Description: High hydraulic pressures are controlled by regulation of air-inlet pressure. Pump measures 8" OD, 10" high. Weight, 20 lbs. Corrosion-resistant construction.

Pump is available as separate unit. Power unit Model C-R, which includes



High-pressure hydraulic boost pump

pump, is complete, ready for installation with reservoir, pressure gauge and necessary control valves. Bul. 221.

Source: A development of Sprague Engineering & Sales, Dept. CP, Gardena, Calif. . . . or for more information check CP 2298 on handy form, pages 2 and 3.

### Replace multiple-plugs with strip which carries 6 outlets . . .

power-carrying limit is 15 amp.

Uses: For providing six additional standard electric outlets for equipment, instruments, controllers, etc.

Features: Easily installed. Outlets are conveniently spaced along 3" strip-case. Eliminates tangle of wires where multiple plugs are used.

Description: Each strip is finished with instrument-black wrinkle enamel, has a 5' heavy-duty rubber-covered cord and plug. Two holes in strip make it easy to mount on wall or side of table. It can also be laid flat or placed in the middle of a table. Total power carried by this accessory should not exceed 15 amperes.

Source: M-O Strip is available from Eberbach & Son Co., Dept. CP, Ann Arbor, Mich. . . . or for more information check CP 2299 on handy form, pages 2 and 3.

## IN ANY OF THESE CHEMICALS

acids (mineral and organic), alkalis, chlorinated solvents containing hydrogen . . .

oils, greases, fats, gasoline, aromatics, nitroparaffins, and other hydrocarbon compounds . . .

alcohols, ethers, esters, heavier ketones, carbon tetrachloride . . .

hydraulic fluids, paint dryers, pickling baths, photographic solutions, plating solutions, printing inks, refrigerants . . .

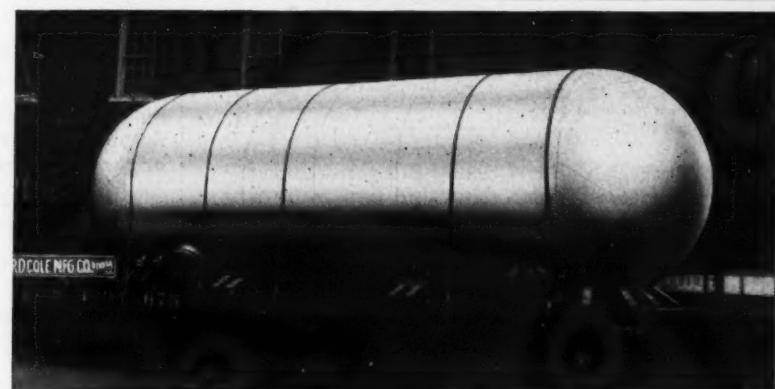
### SURESEAL COATED GLOVES

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NEW DEVELOPMENT Dept. C  
in coated fabric work  
gloves write to:

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CARROLLTON, OHIO  
RUBBER CO.

When inquiring check CP 2300 on handy form, pgs. 2-3

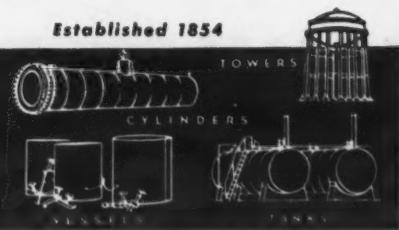


### COLE ALUMINUM TANKS

We have available stock sizes from 8,500 to 22,000 gallons for pressure storage, and tanks of 99.8% pure aluminum for hydrogen peroxide from 5000 to 11,150 gallons. "Cole" can furnish tanks made of steel, aluminum and stainless steel — built in accordance with ASME Code — to meet all insurance requirements. We invite your inquiries for high pressure storage tanks, elevated tanks, acid or oil storage tanks, bins, boilers, stacks, etc.

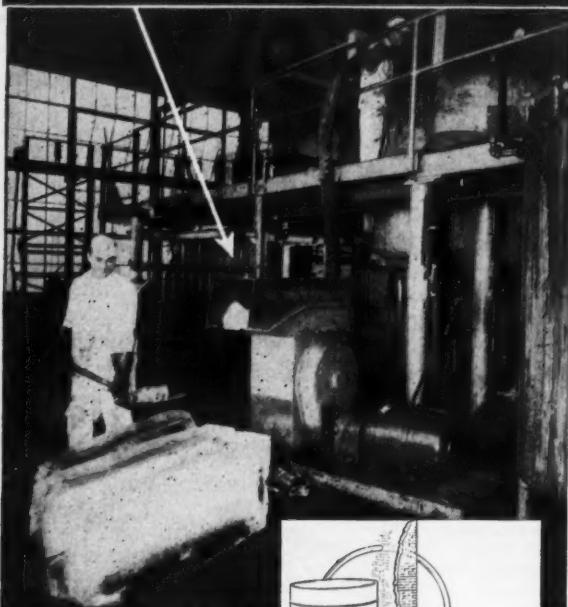
**R.D. COLE**  
MANUFACTURING CO.  
NEWNAN, GA.

Established 1854



When inquiring check CP 2301 on handy form, pgs. 2-3

## CUT THE COST of Chemical Dilution and Cooling with SNOW-ICE



Above: Link-Belt portable electric model 240 Ice Crusher-Slinger which blows snow-ice into chemical vat at plant of Mid-Western paint manufacturer.

Right: Diagram shows typical method employed in using the Ice Crusher-Slinger in a chemical processing operation.

The Link-Belt Ice Crusher-Slinger reduces lump ice to snow-ice, blows it into vats or other equipment for more efficient cooling and diluting at less cost.

Photo above shows a chemical application. Chilling and crystal precipitation of organic compound with snow-ice blown into the vat by a Link-Belt Ice Crusher-Slinger controls crystal size and quality, eliminates crystal grinding and saves time. Link-Belt Ice Crusher-Slingers are available in units with capacities from  $7\frac{1}{2}$  to 60 tons of ice hourly, portable or stationary, electric or gasoline powered. Send for literature.

### LINK-BELT COMPANY

Chicago 9, Indianapolis 6, Philadelphia 40, Atlanta, Dallas 1, Houston 3, Minneapolis 5, San Francisco 24, Los Angeles 33, Seattle 4, Toronto 8, Offices in Principal Cities.

11.110

# LINK-BELT

## ICE CRUSHER-SLINGERS

When inquiring check CP 2302 on handy form, pgs. 2-3

Page 96

## PROCESSING EQUIPMENT

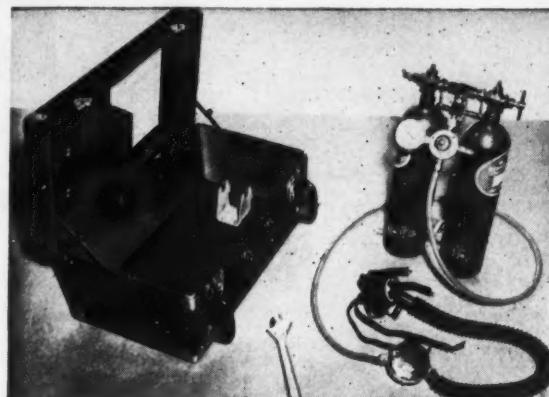
### Self-contained oxygen inhalator supplied ready for use . . .

consists of oronasal mask, 6' extension hose, wrench, valve key and two cylinders

Uses: To administer oxygen to personnel overcome by smoke, fumes, etc.

Features: Simple, effective operation.

Description: Two cylinders have 95-gal. capacity. Oronasal mask, 6' extension hose, wrench, valve key and



Self-contained oxygen inhalator

complete instructions are supplied in handy carrying case. Controls provide choice of either "demand flow" action or constant low-pressure flow.

Source: Produced by Scott Aviation Corp., Dept. CP, Lancaster, N. Y. . . . or for more information check CP 2303 on handy form, pages 2 and 3.

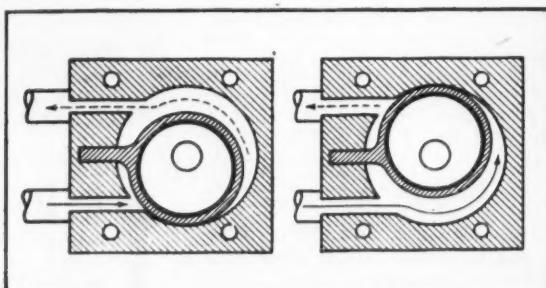
### Pump handles any corrosive without glands, gaskets or check valves . . .

body and rotor of positive displacement unit furnished in any corrosion-resistant material

Uses: To pump acids, alkalies, alcohols, or any other corrosive liquids or gases.

Features: Liquids or gases passing through pump touch only hard rubber or plastic body block and pump rotor. Parts in contact with fluids are available in rubber, synthetic rubber, Hycar, or any other specified material.

Description: As illustrated in sectional diagram, flex-



Positive displacement action eliminates need for check valves  
ible liner is mounted on eccentric shaft, and exerts a  
"squeegee" pressure on a given volume of fluid with each  
revolution. Action and design of the pump eliminate need

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Thoroughly  
Engineered\*  
... Adequately  
Sized



\*For Longer Life  
and Trouble-Free  
Performance



LEADING LINES  
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Heat Exchangers  
Gas Equipment for  
Chemical, Natural Gas,  
Petroleum, Power  
and Refrigeration.

EQUIPMENT DIVISION  
908 Grand Ave., Kansas City 6, Mo.

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When inquiring check CP 2304 on handy form, pgs. 2-3

## MARLEY NOZZLES

3 Ways to Perfect Spray

Atomizing Nozzle for any service requiring a mist-like spray

Two-Piece Nozzle is easily cleaned without removal from piping

One-Piece Nozzle . . . for maximum uniform output at lowest pressure

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NOZZLES

THE MARLEY COMPANY, INC. • KANSAS CITY 15, KANSAS

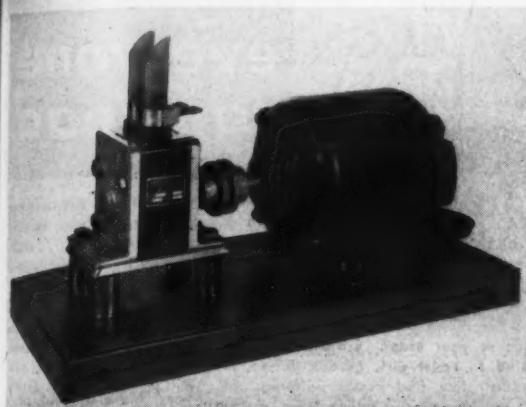
When inquiring check CP 2305 on handy form, pgs. 2-3

CHEMICAL PROCESSING Preview

## PROCESSING EQUIPMENT

of lubrication, gaskets, glands or stuffing boxes. Pump does not require priming or check valves.

Pump can be completely disassembled by removing four bolts. Flexible liner can then be readily removed and a



Compact pump and motor assembly

new liner can be installed in less than ten minutes, it is reported. Pipe connections may be left intact while replacement is being made.

Sealed-in ball bearings and close coupling with the motor assure low maintenance requirements. Compact pumps are available in sizes ranging from fractional to 200 gph. New type pump is designated as "Flex-i-liner".

Source: Manufactured by Vanton Pump Corp., Dept. CP, Empire State Bldg., New York 1, N. Y. . . . or for more information check CP 2306 on handy form, pages 2 and 3.

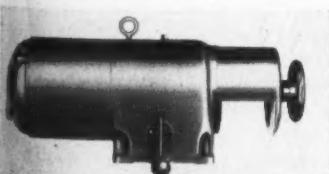
### Power individual machine tools with 4-speed, constant-torque or constant-hp drives . . .

units furnished with ratings from 1½ to 10 hp; have speed reductions of 4:1, 2:1, 1.33:1, and 1:1

Uses: Designed to permit powering of individual machine tools, the units are also applicable to any process or operation which requires a drive of from 1½ to 10 hp.

Features: Delivers full rated hp in each speed. Has smooth plastic handwheel for inching machine spindle, eliminating necessity of touching belt for any operation.

Description: All drives feature unit-cast gear-box, helical, heat-treated gears, large oil reservoir with magnetic drain plug. Shifting diagram is located next to the gearshift. Cast aluminum pulley guard covers output pulley or sheave.



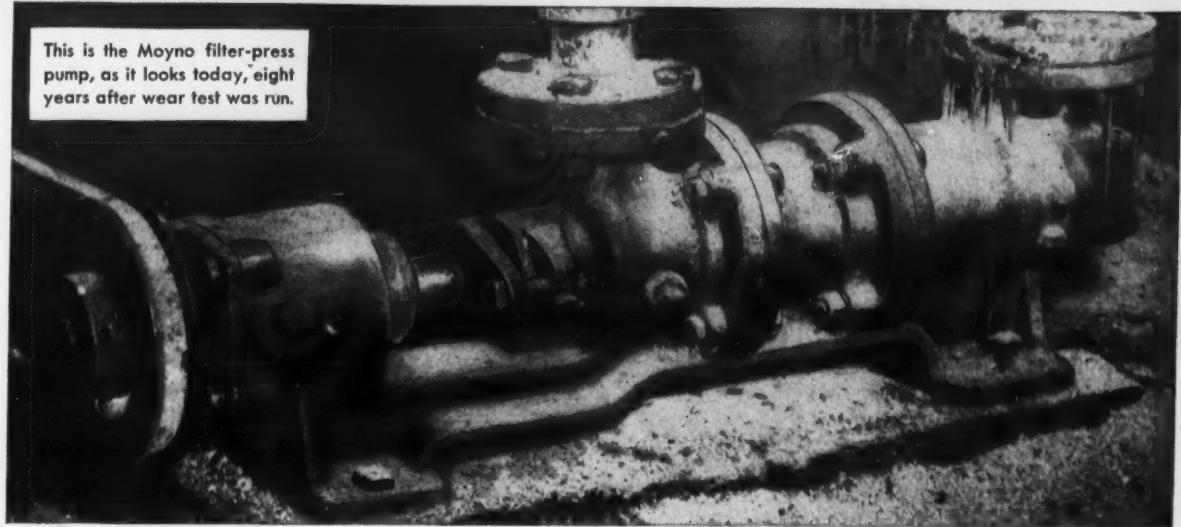
Four-speed drive units

Speed reductions supplied with each

unit are 4:1, 2:1, 1.33:1, and 1:1. Drives have 4 speeds in ratings of 3 hp at 900 rpm to 10 hp at 1800 rpm; 8 speeds in ratings of 1½ hp at 1200/600 rpm to 5 hp at 1800/900 rpm. Designated as Type R4.

Source: Produced by The Lima Electric Motor Co., Dept. CP, Dept. AA42, Lima, O. . . . or for more information check CP 2307 on handy form, pages 2 and 3.

This is the Moyno filter-press pump, as it looks today, eight years after wear test was run.



# MOYNO

## LOSES ONLY 1/3 OUNCE IN WEAR TEST

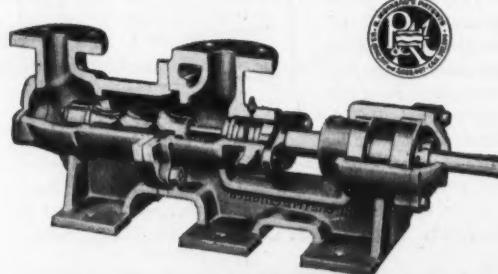
• Here's more proof that R & M Moyno "Progressing-Cavity" pumps can *take it*. A famous lacquer manufacturer carefully weighed the pumping elements of a new Moyno, then pumped 100,000 gallons of lacquer containing an abrasive filter-aid. Re-weigh showed a loss of only 9 grams—less than  $\frac{1}{3}$  ounce. At 500,000 gallons, another check showed no further change. Apparently, initial use had merely polished the rotor and stator.

**MAINTENANCE PRACTICALLY NIL . . .** This Moyno is still going strong after more than eight years' daily use. Not a penny was spent for upkeep in the first two years; the total has averaged less than one dollar a month—a sharp contrast to previous repair costs. Like other Moynos,

this pump has paid for itself *many times over* in maintenance savings alone.

**MOYNOS MAY BE YOUR ANSWER, TOO . . .** If you're faced with pumping problems, investigate these amazing Moyno pumps. "Progressing-cavity" pumping is smooth, non-pulsating, *dependable*. Moynos handle virtually *everything* that will push through a pipe—chemicals and foods, volatiles, abrasive sludges. Bearings are *outside* the pumping compartment; cannot contaminate—or be contaminated. Free Book No. C-22P gives full specifications—write for it, today.

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**MOYNO**  
PROGRESSING-CAVITY  
PUMP



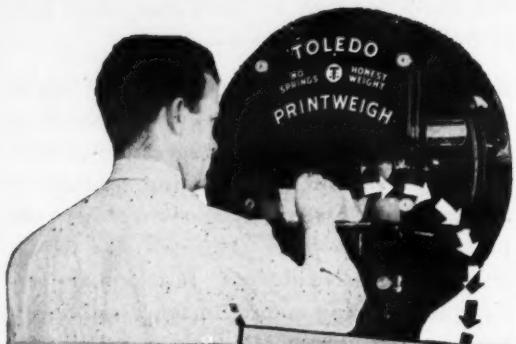
**ROBBINS & MYERS · INC.** MOYNO PUMP DIVISION  
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When inquiring check CP 2308 on handy form, pgs. 2-3



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**TOLEDO**  
HEADQUARTERS FOR SCALES

When inquiring check CP 2309 on handy form, pgs. 2-3

Page 98

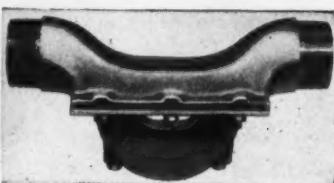
## PROCESSING EQUIPMENT

### Strong magnetic field removes iron from piped liquids . . .

permanent magnetic trap installs in pipeline, does not cause turbulence, is easily cleaned

Uses: Removes tramp iron from liquids carried in pipelines, thereby preventing damage to pumps, screens, grinders, etc., and assuring a product more free from iron contamination.

Features: Design eliminates turbulence and assures that liquid flow is subjected to powerful magnetic field the full length of trap. Contains no moving parts. Tramp iron is easily cleaned from trap.



Magnetic pipeline trap with screwed ends

or more U-shaped Alnico magnets permanently attached to fused stainless steel face plate. This plate is attached to trap casting, a gasket being used to form pressure-tight joint. Pressures can be up to 75 psi.

Housing is normally of bronze; however, it can be furnished in cataract metal, a copper-nickel base alloy that resists acids, alkalis and many organic compounds.

Source: Development of Eriez Manufacturing Co., Dept. CP, 716 E. 12th St., Erie, Pa. . . . or for more information check CP 2310 on handy form, pages 2 and 3.

### Refrigerating machine uses low or high pressure steam for air conditioning . . .

plain water is refrigerant; salt is absorbent; all impractical and toxic features of ammonia avoided

Uses: Air conditioning service, but also has applications for refrigeration where low cost steam is available.

Features: Of particular interest to plants having steam available at moderate costs, or in instances where natural gas is available, or where a steam plant is relatively idle in summer.

Aside from a small solution pump, the unit has no moving parts and therefore is practically noiseless and vibrationless.

The machine is lighter in weight and more compact than other heavy duty refrigeration equipment. It can be installed on rooftops, intermediate floors or in basements. With a low-cost source of energy, and the use of water and a salt as a refrigerant-absorbent, combination operating costs are unusually low.

Present machine uses less than 20 pounds of steam per hour per ton of refrigeration, no matter what the steam pressure. It will automatically adjust itself to partial loads down to 15 per cent of total capacity without loss of efficiency.

Description: Now being produced in 115, 150 and 200 ton capacities. The unit will operate on either high or low pressure steam, or even low pressure waste steam. The absorption principle is, of course, not new. However, it has been in extremely limited use for heavy duty purposes,

## PIPE MARKERS



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When inquiring check CP 2311 on handy form, pgs. 2-3

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Any Speed in 1/2 Second!**

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Don't be limited to a narrow speed range! Speed Selector gives you infinite speed variations in one machine—instantly! Simple, compact, efficient Speed Selector eliminates gear shifts, clutches, step pulleys, multi-speed motors, etc. Widely used by many industries throughout the U.S.A.

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When inquiring check CP 2312 on handy form, pgs. 2-3

CHEMICAL PROCESSING Preview

PROCESSING EQUIPMENT

in recent years, because of the lack of a refrigerant-absorbent combination that was both safe and efficient. Machines of this type using ammonia as a refrigerant have proved to be more costly, less efficient and never suitable for air conditioning because of the toxic qualities of ammonia.

New machine consists of two shells, a heat exchanger, a solution pump and auxiliaries. Its working cycle is as follows: Water to be chilled is sprayed into the flash evaporator located in the upper portion of the absorber-cooler shell. Since this shell is maintained at a high vacuum, a portion of the chilled water evaporates and cools the remaining water. The chilled water drains from the cooler tank and is pumped to the load. Temperature of the chilled water leaving the machine depends on the concentration and temperature of the salt solution sprayed over the coil, located in the lower portion of the shell, which forms the absorber section. The salt solution absorbs the water vapor flashed in the evaporator. Heat of absorption of this vapor tends to raise the temperature of the solution, which is therefore cooled by water passing through the absorber coil in order to maintain the solution at the proper temperature.

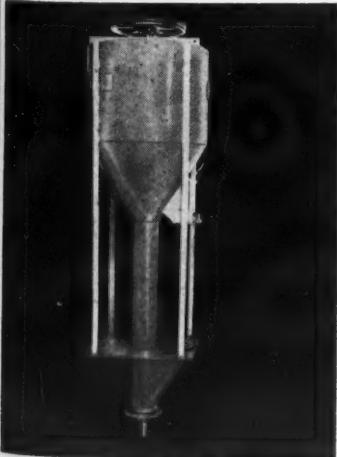
Absorption of this water vapor reduces the salt concentration of the solution, thus also reducing its absorbing power. Therefore the weak solution is continuously drained from the absorber shell and delivered by the solution pump to the upper shell for re-concentration.

Re-concentration is performed in the lower portion, or generator section of the upper shell. Steam, admitted to the tubes, heats the solution and boils off the water vapor previously absorbed in the absorber section, thus restoring the original concentration.

Source: Carrier Corp., Dept. CP, Syracuse 1, N. Y. . . or for more information check CP 2313 on handy form, pages 2 and 3.

**Mix small batches with vertical mixer . . .**

unit is loaded, bags or drums are filled from same position on floor



Small vertical batch mixer without  $\frac{3}{4}$  hp motor is 667 lbs.

Mixer is fed from hopper located below floor-level. Discharge gate is 29" above floor. Mixer capacity is 10 cu. ft.

Source: Produced by Sprout, Waldron & Co., Inc., Dept. CP, Muncy, Pa. . . . or for more information check CP 2314 on handy form, pages 2 and 3.

**Uses:** To mix special formulae, experimental lots, etc., in small batches.

**Features:** Mixer is loaded, and bags or drums are filled from same position. Compact, self-contained, easy to install.

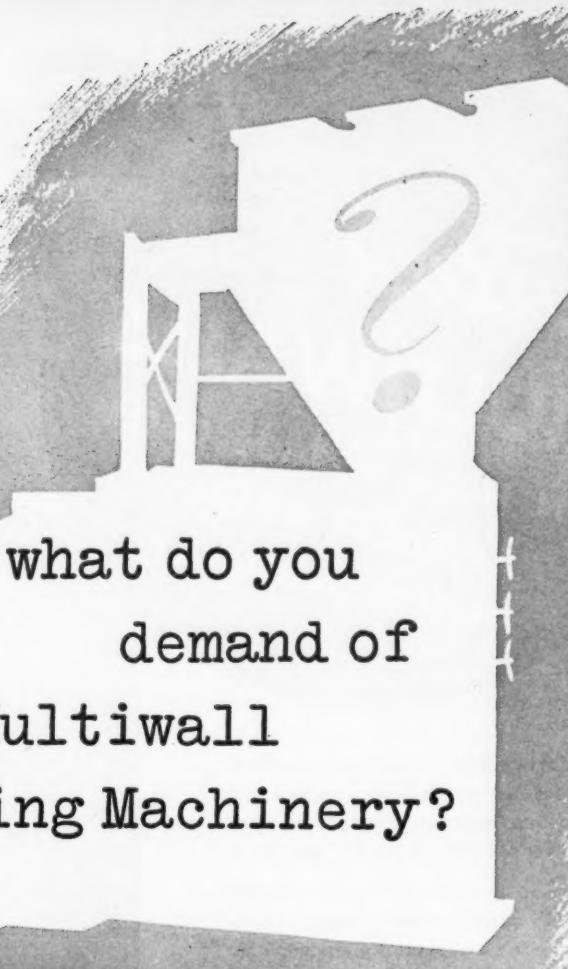
**Description:** Mixer has height of 7'1" above floor, requires 2' space below floor level. Diameter is 2'6". Weight



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When inquiring check CP 2315 on handy form, pgs. 2-3



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## PROCESSING EQUIPMENT

### Provide for shaft-positioning with special, wide-slot take-up units . . .

housing contains deep-groove precision bearing, with oversize balls and retainer

Uses: To provide easy adjustment of shafts where provision must be made for changes in shaft position, such as on conveyors, power transmission unit, etc.



Shaft-positioning unit

Features: Heavy, deep-groove ball bearing. Extra wide milled slots or ways on each side assure firm seating on supporting guides.

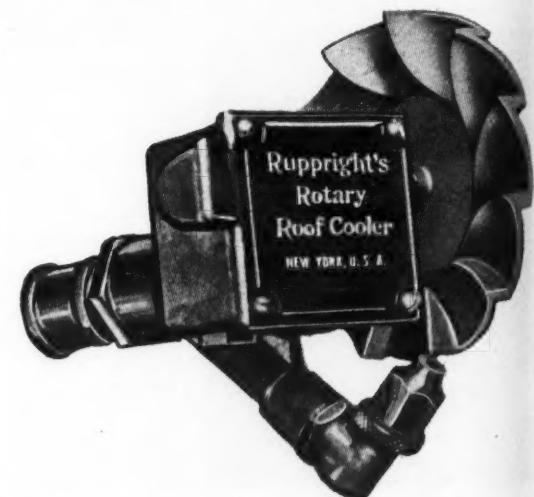
Description: As illustrated, heavy bearing is enclosed in rugged outer housing with wide slots for supporting guides. Housing has a hole for receiving unthreaded end or adjusting screw.

Source: Product of Dodge Mfg. Corp., Dept. CP, 1938 William St., Mishawaka, Ind. . . or for more information check CP 2317 on handy form, pages 2 and 3.

### Spray roof with thin water-film to keep building interior cool . . .

simple rotary spray unit is easy to install, operate, maintain; uses little water

Uses: Covers a wide area of roof with a thin film of water which, in evaporating, keeps building-interiors cool and comfortable.



Water wheel rotates roof cooler; also divides jet from nozzle into spray

Features: Simple to install, operate and maintain. The few sturdy parts need no readjustment and require no thermostatic controls or electric connection. Nozzle is of sufficiently large bore to prevent clogging. Economical in use of water. Amount required to maintain an evaporating



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When inquiring check CP 2316 on handy form, pgs. 2-3



## PROCESSING EQUIPMENT

film is 0.0375 gallons per hour and square foot. On a 50 x 50 ft. roof this amounts to less than 1½ gallons per minute.

Description: Water jet shoots from the nozzle at the best ballistics angle over the space to be cooled. As the water jet hits the tips of the vanes of the water wheel, the force sets the wheel in motion, dividing the jet into drops, which fall on a very narrow sector of the roof. The spinning wheel also rotates the cooler on its support through gears, causing the spray to cover the entire surface gradually. This results in a thin film of water being permanently renewed on the roof.

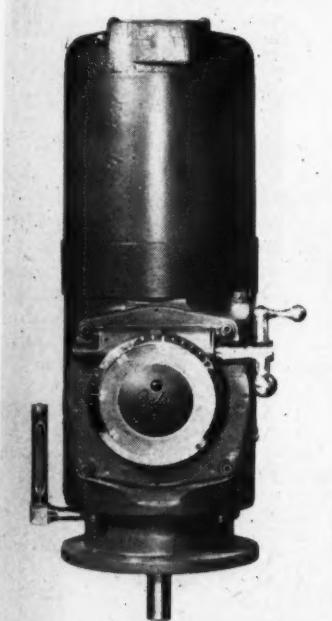
How much roof area is covered by one cooler depends on the available water pressure. If this is measured at a point below the intended location of cooler, ½ lbs./sq. in. must be deducted for every foot of height, and allowance made for friction losses in the piping.

Nozzle easily adjusts in relation to the wheel to provide for properly covering small or large roof areas.

Source: Rupright's Rotary Roof Cooler, Dept. CP, P.O. Box 6795, Los Angeles 22, Cal. . . . or for more information check CP 2318 on handy form, pages 2 and 3.

### Uses of variable-speed drive extended by vertical flange mounting . . .

micrometer control sets speeds accurately; speed remains as set despite load change



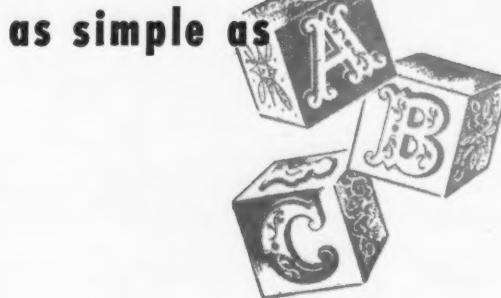
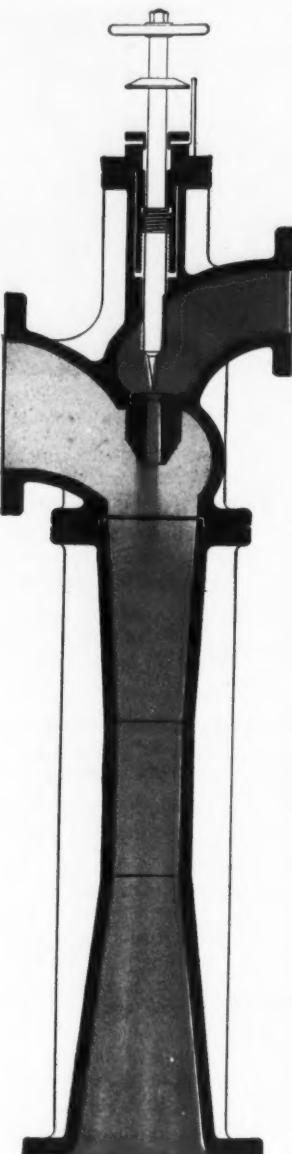
Vertical-flange-mounted variable-speed transmission

flange-mounting dimensions and can be furnished with special shaft extension where required. There are spaced bearings on output shaft, and two tandem-mounted oil seals to assure against oil leakage.

Available without motor, or with 3-phase or capacitor-start-induction-run, 1800 or 3600-rpm motor.

Source: Developed by Graham Transmissions Inc., Dept. CP, 3754 N. Holton St., Milwaukee 12, Wis. . . . or for more information check CP 2319 on handy form, pages 2 and 3.

an **f** "reason why"



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And mixing of gases in desired proportion . . .  
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The **f** Jet Compressor . . .

Utilizes a jet of high pressure gas . . .  
To entrain a low pressure gas . . .  
Mix the two . . .  
And discharge them . . .  
At an intermediate pressure.

The **f** Jet Compressor is of simple construction . . .

With no rapidly revolving parts . . .  
To get out of order . . .  
Adjust or repair.  
It reduces wear to a minimum . . .  
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Operates economically . . .  
With maximum efficiency.

Write for **f** Bulletin 4-F . . .

It contains detailed information.

**SCHUTTE and KOERTING Company**

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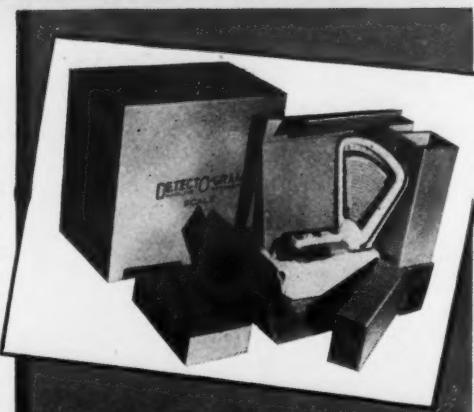
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When inquiring check CP 2320 on handy form, pgs. 2-3

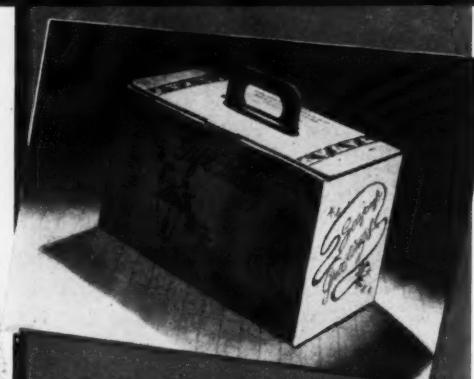
## SHOCK-PROOF SHIPPING BOX

You can't take chances in shipping delicate, precision equipment. If such equipment is damaged in transit, your customer will probably look elsewhere the next time he places an order. Whatever your product, the H & D Package Laboratory can work out a safe, dependable, economical packaging method that will protect your goodwill . . . and your profits!



## Use the LUGGAGE BOX for Extra Sales Appeal

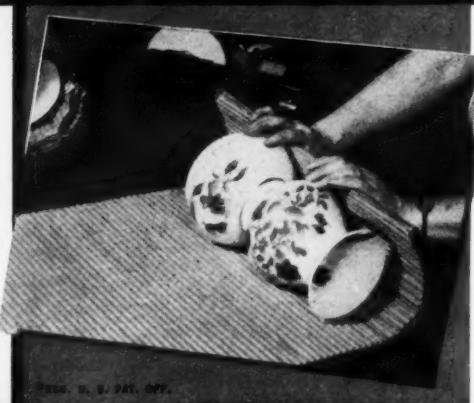
Promotion of seasonal merchandise is but one of many successful applications of the H & D luggage box. Use it to add extra value to your product, to win extra sales appeal. It makes your product easier to carry, easier to use. Your dealers will endorse it—because it displays well, simplifies the selling job, reduces selling costs, eliminates repacking and wrapping.



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### A Packaging Material of a Thousand Uses

PLYPAK\* is a corrugated packing material that combines several thicknesses of corrugated paper to form a protective "blanket" which is ideal for packaging fragile merchandise. Clean and easy to handle, PLYPAK\* is simply "wrapped" around a product, giving it a soft, close-fitting cushion that defies shock. Ask for sample.



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FIG. U.S. PAT. OFF.

**H&D**

**BOXES**

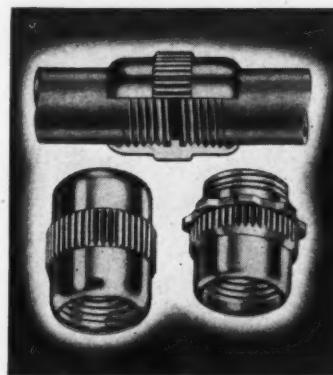
When inquiring check CP 2321 on handy form, pgs. 2-3

Page 102

## PROCESSING EQUIPMENT

**Fittings for thin-wall conduit are self-threading, give positive ground . . .**

2 turns with pliers provide raintight connection which withstands severe pull test



Self-threading fittings

screwed into locking position. Two turns with the pliers or wrench provide raintight connection. Joints withstand severe pull tests, provide positive ground between sections.

As illustrated, fittings are available as double-female couplings or as single-female, single-male couplings. Supplied with knurled grips, or with hexagonal grips if so specified.

Source: Product of Briegel Method Tool Co., Dept. CP, Galva, Ill. . . . or for more information check CP 2322 on handy form, pages 2 and 3.

**Cylindrical design of lab furnace cuts radiation loss, maintains controls at room temp . . .**

muffle furnace features replaceable heating elements, 36-step tap-changing transformer

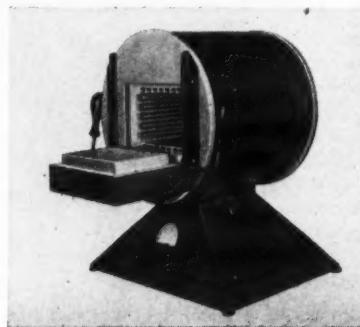
Uses: To dry precipitates, make ash determinations, fusions and ignitions, heat treat metals, fire enamels and ceramics, and perform general experimental work.

Features: Low radiation loss, no trapped heat in base. Instruments operate at room temperature.

Description: Furnace is housed in cylindrical shell which is mounted on pyramidal type base. Small contact area between base and shell allows free circulation of air in base, keeps instruments cool. Recessed position of controls affords full protection; controls are easily accessible through removable side panels.

Tap-changing transformer has 36-step control. Muffle furnaces are available in range of sizes.

Source: Product of Hevi Duty Electric Co., Dept. CP, 4150 Highland Ave., Milwaukee 1, Wis. . . . or for more information check CP 2323 on handy form, pages 2 and 3.



Cylindrical muffle furnace

## General Purpose Centrifugal Pump Engineering and Application Data



## NEW PEERLESS PUMP BULLETIN

Describes and Illustrates  
Pumps from 11/4" to 48"  
with capacities to 60,000 gpm,  
heads up to 300 ft.;  
handling fluids to 300 F.

Here is helpful, up-to-date, information on the augmented line of Peerless Type A single stage, double suction, split case, horizontal pumps for handling water and other alkaline liquids. This new 24-page bulletin is fully illustrated, showing construction details and sectional views, as well as giving complete dimensional data on each pump size in the line.



Request your copy today!  
Ask for Peerless Pump  
Bulletin B-1300

## PEERLESS PUMP DIVISION

Food Machinery and Chemical Corporation

Factories: Indianapolis, Ind.; Los Angeles 31, Calif.;  
DISTRICT OFFICES: Chicago 40, 4554 N. Broad St.;  
New York 5, 37 Wall Street; Omaha, Nebr., 4330 Lemore  
Worth St.; Atlanta Office: Rutledge Blvd., Decatur, Ga.;  
Dallas 1, Tex.; Fresno, Calif.; Los Angeles 31, Calif.

When inquiring check CP 2324  
on handy form, pgs. 2-3

CHEMICAL PROCESSING Review

## PROCESSING EQUIPMENT

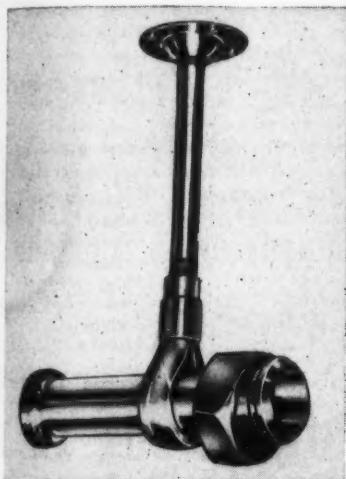
**Locking sleeve  
hangs pipe  
in jiffy . . .**

off-center hinge holds pipeline when hinge is open

Uses: One-man pipe hanger for faster pipe removal and installation.

Features: Locking-sleeve device speeds operations. Off-center hinge-point holds pipe in hanger when hinge is open.

Description: High-grade stainless steel, in sizes 1 through 4". After



Locking-sleeve pipe hanger

setting line in hanger, hinge is closed and locking sleeve slipped into position.

Source: Developed by Universal Machining Company, Dept. CP, 6615 28th Ave., Kenosha, Wis. . . or for more information check CP 2325 on handy form, pages 2 and 3.

### Threading, assembling of stainless pipe

Methods of threading and assembling stainless steel pipe and fittings are suggested in a 6-page pamphlet of vest-pocket size.

Machine, lathe and hand threading are discussed, along with introductory remarks concerning the cutting of stainless steels. Issued by The Cooper Alloy Foundry Company, Dept. CP, Hillside, N. J. When inquiring specify CP 2326 on handy form, pages 2 and 3.

For more information on product at right, specify CP 2327 see information request blank between pages 2-3.

## FOR A 5 MINUTE MIX OR 24 HOUR SERVICE . . .

**LIGHTNIN &  
MIXCO  
MIXERS ARE NOW  
USED FOR . . .**

Mixing  
Dissolving  
Suspending Solids  
Emulsifying  
Heat Exchange  
Improvement  
Washing  
Reacting and  
Precipitating  
Extracting  
Liquid Gas Contacting  
Batch or Continuous  
Treating



# LIGHTNIN & MIXCO MIXERS

**THE ACCEPTED STANDARD IN PROCESS WORK**

Lightnin Portables are designed so that they can be moved quickly and easily from one job to another, or permanently installed and operated on 24-hour service. . . . Years of trouble-free service are the result of sound mechanical design and construction based on Mixing Equipment Company's unparalleled experience in the manufacture of mixers. That is why Lightnin Mixers assure the lowest possible mixing costs.

Available in air driven (1/8 to 1 H.P.) and electric driven (1/8 to 3 H.P.) models, gear and direct drive, with motors, shafts, impellers and materials of construction to meet your operating conditions.



Top Entering Mixers: 1 to 50  
H.P. for open or closed tanks.



Side Entering Mixers: 1 to 25  
H.P. for use on tanks up to  
5,000,000 gallons capacity.



Send now for this technical literature

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Please send me the literature checked:

- B-76 Side Entering Mixers
- B-78 and B-89 Top Entering Mixers
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Title \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

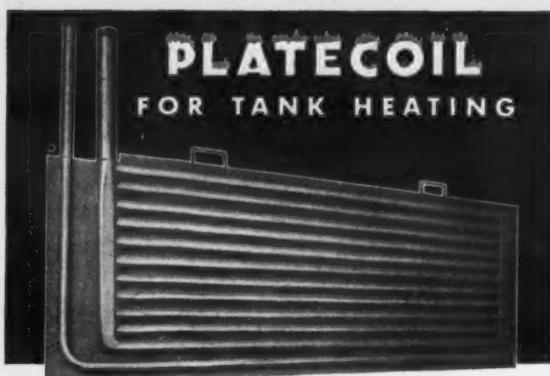
## MIXING EQUIPMENT CO., Inc.

1085 GARSON AVENUE

ROCHESTER, NEW YORK

IN CANADA: WILLIAM AND J. G. GREEY LIMITED, TORONTO

**LIGHTNIN & MIXCO MIXERS ARE COMPLETE . . .  
READY TO OPERATE WHEN DELIVERED**



### PROVIDES ④ OUTSTANDING SAVINGS

- ① More Prime Surface for More Efficient Heating.
- ② Develops Quick Heat for Quick Starts. (As Much as 50% Faster Than Pipe Coil.)
- ③ Takes Half the Space, Weighs Half as Much as Pipe Coil.
- ④ Platecoils are easily cleaned and are Replaced in Minutes by Two Men — No Downtime for Repairs — No Tank Dumping.

Take advantage of the complete laboratory assistance offered by the Kold-Hold Company to help you with your heat transfer problems. Send too, for complete technical manual and descriptive bulletin No. U49.

**PLATECOIL**  
Division  
KOLD-HOLD MFG. CO.  
LANSING 4, MICHIGAN

When inquiring check CP 2328 on handy form, pgs. 2-3

**NEW... COMPACT** Stainless Steel Gate Valve

Combines Quality with Economy

**COOPER ALLOY**  
Certified  
UNION BONNET  
SCREW ENDS  
GATE VALVE  
FIG. 115

Available in various stainless alloys, in sizes  $\frac{1}{2}$ ",  $\frac{3}{4}$ ", and 1", this Cooper Alloy Certified valve is unusually well suited for fixed plant installations as well as for use on fabricated equipment.

WRITE FOR DETAILED DESIGN INFORMATION

**THE COOPER ALLOY FOUNDRY CO.**  
HILLSIDE, NEW JERSEY

When inquiring check CP 2329 on handy form, pgs. 2-3

Page 104

### PROCESSING EQUIPMENT

#### Cause of blowouts eliminated in high-pressure valves . . .

safety-gland nuts are feature of stainless steel units



Stainless steel high-pressure valve nut are rounded to prevent scuffed knuckles. Locking device secures gland nut from danger of unscrewing.

Stem threads are isolated from flow to prevent gumming and corrosion. Rated pressures to 60,000 psi. Direction of flow and pressure ratings are marked on each valve.

Source: Developed by Autoclave Engineers, Dept. CP, Erie, Pa. . . or for more information check CP 2330 on handy form, pages 2 and 3.

#### All-welded spherical tanks assure uniform pressures for water systems . . .

or, for fire protection, entire capacity can be held in reserve for sprinkler systems

Uses: Gravity water pressure for general service and/or water-supply for sprinkler systems.

Features: Constructed entirely of mild steel plates with butt-welded joints. Interior and exterior surfaces are smooth and flat, and easily painted where necessary. Easy access to top of sphere, and painter's rings at the top of the supporting column, make it possible to paint entire structure economically by lowering bosun chairs, or lines supporting light scaffolding, from these two points.

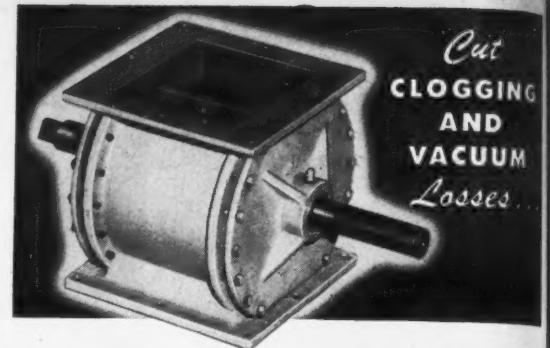
Supporting column has graceful sweeping lines from top to bottom. Flared base of column rests on, and is anchored to, a circular concrete foundation designed to support weight of the structure and, at the same time, resist wind loads and other overturning forces.

Description: Although capacities from 25,000 to 250,000 gallons are in use, standard sizes are from 25,000 to 100,000 gallons, in heights of 50, 75, 100 and 125 feet to the low-water line.

Column supporting the sphere contains piping connections and ladder extending from door at ground-level to combination manhole and vent at top of sphere. There are no ladders on outside of structure. A steel cylinder extends from top of supporting column to top of sphere.

Normally, a stub overflow is furnished. If desired, overflow pipe can be extended to ground. When this is done, there is an elbow in the line at ground-level and a horizontal run of pipe that extends outside the base of the column above the foundations.

When used for small water systems, the tank maintains a



#### ... with the Beaumont Rotary Feeder

A renewable brass strip recently added to the Beaumont Rotary Feeder—seals the upper portion of the rotor; prevents fine chemicals, soot or ash from collecting between rotor and sideplates; protects bearings; eliminates clogging; and greatly reduces vacuum or pressure losses in the system. Sizes range from 4 to 12 inches, or larger if desired.

In chemical as well as food, power and mineral fields—Beaumont Rotary Feeders are ideal for fine material handling. For coarse or lumpy materials, Beaumont manufactures other types of feeders and gates. Write for complete information to:

**BERUMONT BIRCH COMPANY**  
1516 RACE STREET • PHILADELPHIA 2, PA.  
Designers Manufacturers Erectors

When inquiring check CP 2331 on handy form, pgs. 2-3

## GET DETAILS ABOUT THIS SANITARY COOKER-MIXER

CONFORMS TO THE MOST RIGID HEALTH DEPT. REQUIREMENTS. Double-Action GROEN Model TA . . . heavy-duty, extra-rugged unit for heavy processing. Fully enclosed vertical motor drives two shafts: (1) — a slow speed shaft with extra-large shovel type scrapers and (2) — a secondary high speed shaft equipped with any of a variety of mixer, blenders or beaters, all interchangeable for various kinds of processing.

With GROEN exclusive removable shaft coupling, ALL AGITATOR PARTS ARE REMOVABLE IN A FEW SECONDS for easy cleaning . . . yet cannot come apart in operation. And coupling is equal in strength to a solid shaft. A very durable, widely versatile mixer. Write for details.

**GROEN**  
STAINLESS STEEL  
STEAM JACKETED  
TWIN-SHAFT  
MIXER KETTLE



**GROEN Mfg. Co.**

4531 W. Armitage Ave.  
Chicago 39, Ill.

When inquiring check CP 2332 on handy form, pgs. 2-3

CHEMICAL PROCESSING Preview

## PROCESSING EQUIPMENT

relatively uniform pressure in the mains at all times. When elevated tanks are used in large water systems, the pumps are normally operated at a uniform rate. The tanks are either connected directly to the mains so that water can flow in and out of them freely, or equipped with control valves so that water feeds back into the system at peak load periods.

In either case, the tanks are filled when demand for water is low, and the reserve that is built up in them feeds back into the system to meet peak loads.

In fire protection service, entire capacity of the tank is held in reserve at all times for exclusive use of the sprinkler system. However, both water supply and fire protection service can be supplied from a single structure, and where insurance regulations permit, tanks may be piped for dual service.

Source: "Waterspheres" are built by the Chicago Bridge & Iron Company, Dept. CP, 332 South Michigan Ave., Chicago 4, Ill. . . or for more information check CP 2333 on handy form, pages 2 and 3.

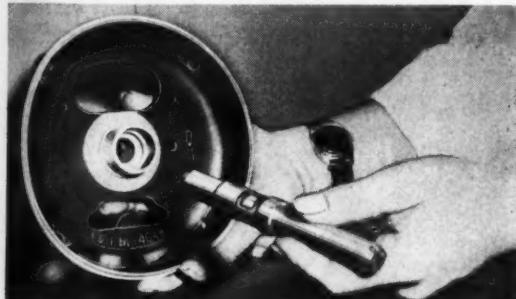
### Remove worn sleeve bearings, insert new bearings in operation . . .

finished steel rod replaces bearings without reaming.

Uses: To remove worn sleeve bearings in motor end-plates, and to insert new bearings, in one operation.

Features: Assures correct alignment; replaces old bearings with new, without reaming.

Description: Tool is steel rod, accurately finished to accommodate precision-bored bearings on one end, and unbored bearings (for undersize shafts), on the other.



Bearing tool replaces old sleeve bearing with new in one operation

Central shoulder separates the two ends.

To replace worn bearing, new bearing is slipped on rod as illustrated. Spacer, furnished with rod, is next placed on the rod with its unchamfered end against new bearing. End of tool is inserted in old bearing, from inner side of end-plate. New bearing is positioned so that its oil-wick-hole lines up with hole in old bearing.

Press or rawhide mallet is then used to drive the tool until its shoulder seats against end-plate. Spacer forces out old bearing; and the new bearing, as it is pushed into its proper position, forces out the spacer. Old bearing acts as a pilot, assuring correct alignment of the new bearing.

Bearing tool is available in 4 sizes, for motors with finished bearing sizes of 0.655, 0.751, 0.812, and 1.062".

Source: Produced by Wagner Electric Corp., Dept. CP, 6489 Plymouth Ave., St. Louis 4, Mo. . . or for more information check CP 2334 on handy form, pages 2 and 3.

**OIL AND STEAM LINES AT HUGE GYPSUM PLANT DEMONSTRATE  
Versatility OF RIC-WIL INSULATED PIPE UNITS**

*Ric-wil Units for 8" oil and 2" steam lines being installed under pier just above the water line.*

**Ric-wil Units for 8" oil and 2" steam lines being installed under pier just above the water line.**

**A**T THE GREAT NEW PLANT of the National Gypsum Company at Baltimore Ric-wil Insulated Piping was specified for lines carrying fuel oil from ship to storage tanks, boiler house and mill, and steam from boiler house to various plant structures. These oil and steam lines are typical examples of the adaptability of Ric-wil Pipe Units to diversified uses and conditions, and the efficiency with which they will accommodate any required arrangement or combination of pipes.

The oil line shown in the diagram with its various branches comprises more than 1600 ft. of Ric-wil Units with pipes insulated from the exterior but not from each other. Capable of carrying 800 gallons of oil per minute at 150°F., the line runs just above the water line under the pier, and continues underground as indicated. Welded connections are used throughout.

These Ric-wil arteries of fluid transportation consist of an 18" conduit enclosing an 8" oil line with 2" steam tracer from Boiler House to Pier along with 3" and 1 1/4" oil lines from Boiler House to Mill. Proper oversizing of conduit provides

for expansion and lateral movements. Other combinations of Ric-wil Units convey steam, with condensate return to various service outlets.

Specified also for these installations were completely prefabricated Ric-wil accessory units and fittings, including expansion loops, ells, anchors, conduit decreasers, watersheds, tees and glands.

Scientific design and construction of Ric-wil Insulated Pipe Units, precision prefabricated to exact conformity with specifications, assure high thermal efficiency, dependability and minimum maintenance requirements for these systems.

**Consulting Engineers: Hall, Turpin and Wachter, Baltimore  
General Contractor: Baltimore Contractors, Baltimore**

**For more complete information on Ric-wil systems write:  
The Ric-wil Co., Dept. 150**

**RIC-WIL**  
 INSULATED PIPING SYSTEMS  
**THE RIC-WIL COMPANY • CLEVELAND, OHIO**  
 REPRESENTATIVES IN PRINCIPAL CITIES

**For Safety Sake  
IN MIXING**

**For Laboratory  
and Production Mixing**

**PNEUMIX AGITATORS** safely mix all types of materials from water thin to heavy substances—flammable acids—even in explosive atmospheres. Hazards of explosion are removed because compressed air operation eliminates dangerous sparking.

Pneumix is easier to handle. Standard production unit weighs only 24 pounds and that's a great advantage in batch mixing.

Other features of Pneumix—Cannot overheat—Cannot burn out—Not affected by overloads.

**From every angle, Pneumix Agitators are the perfect mixers—and there's a type for every need.**

**Write for latest bulletin.**

**ECLIPSE AIR BRUSH COMPANY**  
301-2 Park Ave., Newark 7, N. J.

PNEUMIX DIVISION  
**ECLIPSE**

When inquiring check CP 2336 on handy form, pgs. 2-3

**How much do  
shutdowns  
for repairs  
COST?**

**CONTINUOUS OPERATION**  
results  
from the use of . . .

**ACID-PROOF TANTALUM**  
Chemical Processing Equipment

Tantalum heat exchangers, condensers, Fansteel-built HCl Absorption Plants and other units are giving perfect performance long after equipment has paid for itself.

**TANTALUM:** Only known material combining these characteristics to greatest degree in a single element. **ACID-PROOF:** Not merely "resistant," but immune to corrosion. High strength — no damage from thermal shock. Unrestricted heat flow.

Ask for informative booklet "The Metal Tantalum." Fansteel Metallurgical Corporation, North Chicago, Illinois.

USE TANTALUM WITH ECONOMY for most acid solutions and corrosive gases or vapors except HF, alkalis or substances containing free SO<sub>2</sub>.



**Fansteel**  
Acid-Proof  
TANTALUM

When inquiring check CP 2337 on handy form, pgs. 2-3

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## PROCESSING EQUIPMENT

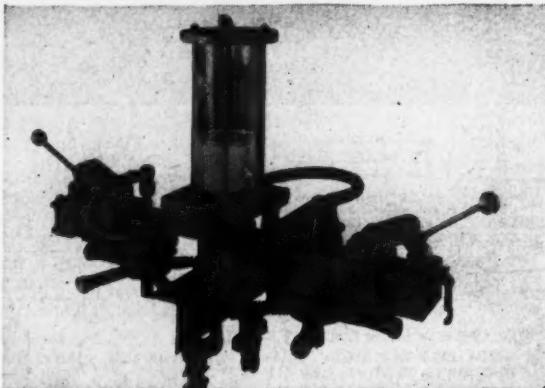
### Conveyor trolley-wheels get automatic lubrication while passing . . .

hub of rolling wheel engages protruding grease-nozzle to receive measured lubrication

**Uses:** Self-contained grease lubricator for conveyor trolley-wheels. For wheels with or without Zerk hydraulic fittings.

**Features:** Driven by contact with trolley wheels; hence, requires no external power.

**Description:** Unit sits astride I-beam, 5 centrally mounted grease-dispensing nozzles protruding like wheel-spokes from each end of cross-arm (see cut). As trolley-wheels approach along both sides of I-beam, their respective hubs engage sleeve of nearest nozzle, or "spoke." Forward movement of trolley-wheel along I-beam forces pumping unit inward, delivering measured quantity of lubricant into wheel bearing.



Lubricator mounted on I-beam. Hub of trolley-wheel in foreground is just engaging one of 10 grease-nozzles (5 on each side of I-beam)

As trolley-wheels pass point of lubrication, a cam located in pump housing snaps next grease-nozzle, or "spoke," into exact position to contact the next wheel. This procedure continues as long as conveyor remains in motion.

Grease-nozzles are constantly supplied with lubricant from transparent plastic reservoir. Castings are employed wherever practical, including the cams. Quick-release lever takes lubricator out of service. Lubricant is forced into pumping units either by spring-follower or air pressure. These are optional.

**Source:** Model 304 grease lubricator is a development of J. N. Fauver Company, Inc., Dept. CP, 49 W. Hancock, Detroit 1, Mich. . . . or for more information check CP 2338 on handy form, pages 2 and 3.

### Easily installed lampless units are efficient source of infra-red heat . . .

operate at low cost to 500°F with practically no transmission losses; made in four sizes

**Uses:** Adaptable to baking, drying, heating, preheating, carbonizing, dehydrating.

**Features:** Described as operating at lower cost than lamp or strip heater equipment and at higher efficiency than strip heaters, whether sheathed or open. Insulation prevents the terrific heat loss encountered in some other forms of resistance heating equipment.

There are practically no transmission losses due to the novel

## LITHIUM HEADQUARTERS



**"Lithy  
says:"**

For your Lithium requirements look to a reliable supplier who specializes in Lithium and its compounds. You are offered a wide variety of compounds in many convenient forms. All are available in experimental or commercial quantities.

**LITHIUM HYDROXIDE** ANHYDROUS, LITHIUM HYDROXIDE MONOHYDRATE, LITHIUM NITRATE.

**CERAMIC LITHIUM COMPOUNDS:** LITHIUM ALUMINATE, LITHIUM COBALITATE.

**LITHIUM HYDRIDE**—Lumps or Ground. Uses: Drying agent, hydrogen generation, organic reactions.

**LITHIUM BROMIDE**—LITHIUM CARBONATE, LITHIUM CHLORIDE, LITHIUM FLUORIDE,

LITHIUM MOLYBDATE, LITHIUM TITANATE, LITHIUM ZIRCONATE, LITHIUM ZIRCONIUM SILICATE.

**METALLOY CORPORATION**  
BAND TOWER  
MINNEAPOLIS, MINN.  
Division LITHIUM CORPORATION  
OF AMERICA, INC.

When inquiring check CP 2339 on handy form, pgs. 2-3

## New DUST FILTER

PROVIDES CONTINUOUS CLEANING  
FOR CONSTANT AIR FLOW

- High Air to Cloth Ratios
- Effectively Filters Through Felt
- Reverse Jet Continuous Cleaning
- Low Back Pressure

The New **DAY** "Autoclean" Dust Filter operates with air to cloth ratio of 15 or 20 to 1, and back pressures of only 1" to 2" water gauge. Such performance is made possible by the type of filtering felt used, and the gentle yet effective continuous reverse jet cleaning.

*Check THESE ADVANTAGES*

Licensed by  
**DAY**  
H. J. Hersey, Jr.  
SINCE 1881

- ✓ Continuous Cleaning—Uniform air volume.
- ✓ Continuous Operation—No need to shut down even part of filter for cloth cleaning.
- ✓ Parallel Air Flow—Air and dust travel downward toward continuous dust discharge.
- ✓ Economy—Higher air to cloth ratio reduces total filter requirements.

Write-to-**DAY** for New "Autoclean" Dust Filter Bulletin.

**The DAY Company**  
852 3rd Avenue, N.E., Minneapolis 13, Minnesota  
IN CANADA Box 70, Fort William, Ontario  
Branch Plants in St. Paul, Buffalo, and Welland, Ontario

When inquiring check CP 2340 on handy form, pgs. 2-3

CHEMICAL PROCESSING Preview

channel construction of the resistance alloy used. No round wire — no flat wire — no ceramic packing — no sheath metal to heat.

These new lampless units are interchangeable with the maker's lamped and unlamped units. Work temperatures as high as 500 degrees F. can be had with ease. Diagonal positioning of units eliminates hot spots and hot streaks in operation.

**Description:** Construction embodies Pyrex tubes with spiral channel resistors, stainless steel contacts and stainless steel reflectors. Four sizes: 2, 4, 8, and 12 lampless units. These "electric building blocks," when built into insulated ovens become, in fact, the insulated reflective interior of the oven. Lampless units are installed advantageously where space is distinctly limited or where there is an objection to glare of tungsten filament lamps. (This maker, however, meets this problem with carbon filament lamps.) The standard lampless "Spir-O-Therms" used are 375 watts, but just as in the case of lamped units, other wattages are available. Other reflectors are also offered.

There are cases where a combination of lamped and lampless equipment is desirable. All units of both types are hingeable. All have provision for simple mounting means. "Spir-O-Therms" are as easy to change as fluorescent lamps.

**Source:** "Spir-O-Therm" lampless units are a development of The Miskella Infra-red Company, Dept. CP, East 73rd & Grand Ave., Cleveland 4, Ohio . . . or for more information check CP 2341 on handy form, pages 2 and 3.

#### Hydro-ejector pumps are easily converted from shallow to deep-well operation . . .

units feature bronze impellers, venturi tubes, nozzles; deliver non-pulsating flow of water

**Uses:** To deliver up to 1800 gph from deep or shallow wells.

**Features:** No moving parts in well. Easy conversion from shallow to deep-well operation.

**Description:** Standard drip-proof motors are bolted inside pump shell. Stainless steel pump shaft drives impeller. For shallow well pumping, part of water energized by impeller passes through dome in front and is circulated through jet, creating partial vacuum. This vacuum causes water from well to flow through suction pipe and foot valve.

For deep well pumping, dome is removed from nose of pump, and jet and venturi assembly is placed in well. Part of water from impeller is passed down well to nozzle, and suction created raises water to level where impeller can deliver it to the pressure tank.

Pump delivers non-pulsating flow of water when used on either type well, and has bronze impellers, venturi tubes, nozzles. Available in ratings to 1800 gph for deep-well pumping, 2000 gph for shallow-well pumping.

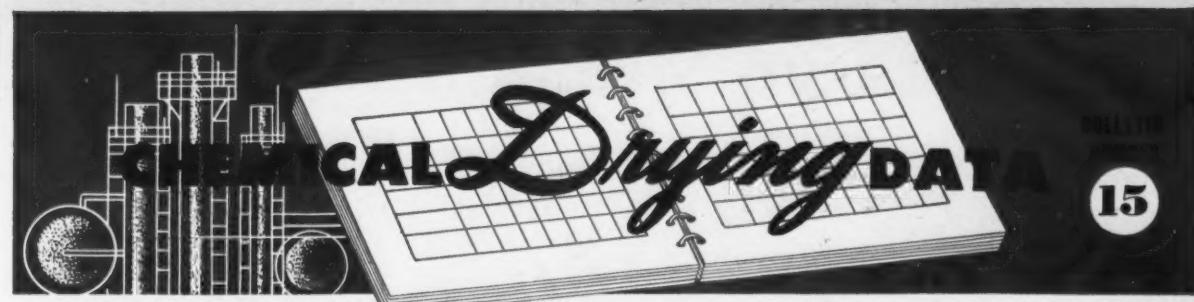
**Source:** Aurora Pump Co., Dept. CP, Aurora, Ill., is the maker . . . or for more information check CP 2342 on handy form, pages 2 and 3.

Pumps for shallow and deep well operation

Pump delivers non-pulsating flow of water when used on either type well, and has bronze impellers, venturi tubes, nozzles. Available in ratings to 1800 gph for deep-well pumping, 2000 gph for shallow-well pumping.

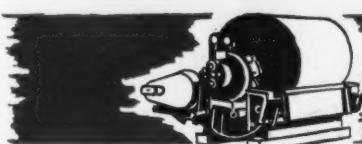
**Source:** Aurora Pump Co., Dept. CP, Aurora, Ill., is the maker . . . or for more information check CP 2342 on handy form, pages 2 and 3.

JULY, 1949



PUBLISHED MONTHLY FOR PROCESS INDUSTRIES EXECUTIVES AND OPERATING PERSONNEL

## Early consideration of drying equipment proves profitable on all counts



### Preliminary Equipment

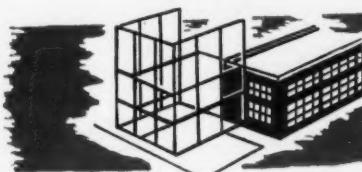
Dryer design is dependent upon the capacity desired and the physical characteristics of the product. In studying a given problem, Proctor engineers may recommend that to obtain the desired capacity the product be delivered to the dryer in a certain state . . . and this may govern the type of preliminary equipment that should be used. Early consideration—before any equipment has been ordered—may well save time, trouble and expense in making the preliminary equipment and the dryer dovetail.



### Subsequent Equipment

The characteristics of any given material, when once dried, may affect the type of subsequent equipment that is needed. Only when the material has been dried experimentally can this be determined with any degree of certainty. Where

drying equipment is to be a part of a continuous processing line, it pays to consider the problem as a whole rather than order equipment piece by piece. When this is done at the very outset, all of the equipment can be engineered to dovetail and assure smooth production.



### Building Layout

Since huge continuous drying systems are often massive installations—building layout may be affected by the size of the drying equipment needed to meet product and output requirements. When expansion is considered—or an entirely new plant is to be built—it pays to consider drying needs before final building plans are approved. Otherwise the finished building may be impractical to house any drying system. It is always more painless to know for certain that the drying system can be adequately housed and that foundations will support the floor load. The best time to determine all of this is early—before the building has gone too far to change.



### Lower Costs

All of this, of course, adds up to lower costs. When preliminary and subsequent equipment are ordered to dovetail with the dryer and the building plans are made correctly the first time—the savings are tremendous. Even when none of this enters the picture—it is always less costly to consult those who are specialists in solving drying problems—rather than trying to conduct your own research. One manufacturer who stands out because of his misfortune found this out after spending \$20,000. for equipment that was not well suited to his needs. After spending that, he consulted Proctor engineers who recommended just the system that he needed—which they could have done before he had wasted his money.

When you are planning a new product or process where drying is to be part of the line—remember it pays to consider that equipment early and to think of it as a vital link in your over-all process.

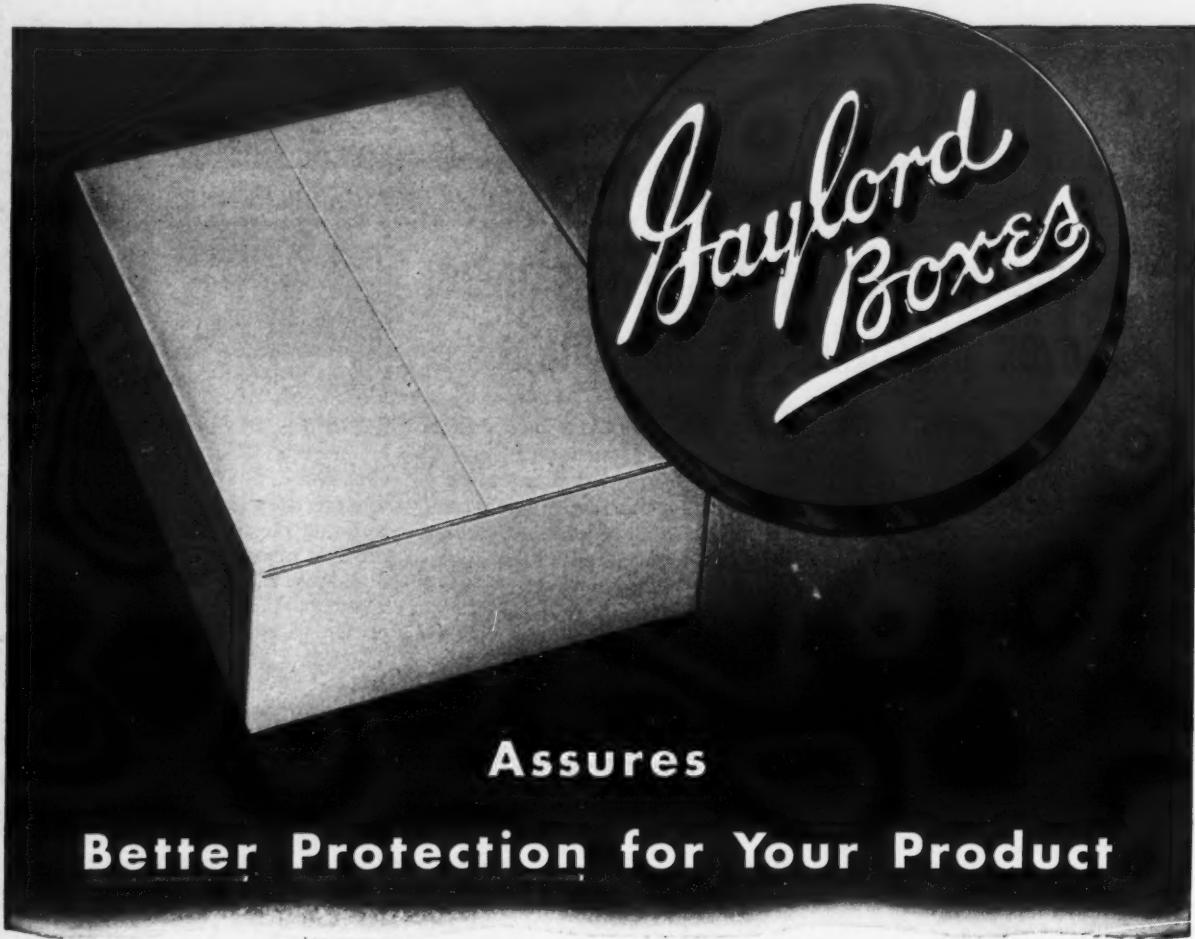
Proctor engineers have at their disposal, valuable drying data and complete facilities to help you determine the proper method of drying. By considering this phase of your operation at the very outset, you are sure to save time, money and trouble later on.

Proctor research facilities are available at no cost or obligation to the manufacturer with a drying problem.

Much Proctor drying equipment and textile machinery is covered in full or in part by patents or patents pending.

When inquiring check CP 2343 on handy form, pgs. 2-3

# The Reserve Strength Built Into



Assures

**Better Protection for Your Product**

To minimize the chance for damage in shipping, and to create good will with your customers, take advantage of the extra strength found in Gaylord Boxes.

Rigid standards that demand superior raw materials and continuous quality control through every step of manufacturing give Gaylord Boxes that reserve strength so important to the safety of your product.

You'll find Gaylord Sales Offices in the cities listed below ready to help you solve your packaging problems. Call the one nearest you.

**GAYLORD CONTAINER CORPORATION General Offices: ST. LOUIS**

Corrugated and Solid Fibre Boxes

Folding Cartons

Kraft Grocery Bags and Sacks

Kraft Paper and Specialties

New York • Chicago • San Francisco • Atlanta • New Orleans • Jersey City • Seattle  
Detroit • Indianapolis • Houston • Los Angeles • Oakland • Minneapolis  
Jacksonville • Columbus • Fort Worth • Tampa • Cincinnati • Dallas  
Des Moines • Oklahoma City • Greenville • Portland • St. Louis • San Antonio  
Memphis • Kansas City • Bogalusa • Milwaukee • Chattanooga • Weslaco  
New Haven • Appleton • Hickory • Greensboro • Sumter • Jackson • Miami

## PROCESSING EQUIPMENT

**Splashing acids cannot endanger wearer of plastic hood . . .**

gives complete protection to head, eyes, neck, shoulders, back and chest

**Uses:** Protects against injury from acids, caustics and other corrosive chemicals, guarding wearer against spillage, splashes, etc. when working near acid lines, storage tanks, pickling vats, plating solutions and in other hazardous locations.



Lightweight, flexible acid hood

**Description:** Hood is of flexible vinyl plastic with a sturdy inner head frame and clear, replaceable vinyl plastic lens. Headgear is whitecoated vulcanized fiber. It is adjustable to any headsize, is equipped with a chinrest, and is pivoted so that the entire assembly may be swung up over the head.

The bib section of the hood is secured with snap fasteners at each side for a comfortable, protective fit under the arms and around the waist.

**Source:** "Chemgard" acid hood is made by Mine Safety Appliances Company, Dept. CP, Braddock, Thomas & Meade Sts., Pittsburgh, Pa. . . . or for more information check CP 2344 on handy form, pages 2 and 3.

**Butyl-molded instrument transformer has greater sustained accuracy . . .**

first of new line is 500 volt indoor model; interchangeable with other transformers

**Uses:** For accurate indoor metering and relay services.

**Features:** The butyl compound, injected under high pressure (while the assembled components are in a special mold) is forced into every little space — around the laminations of the core, in between the coils — in fact into every space that is not occupied by some solid part. This provides a homogenous insulation that is resilient, oxidation-resisting, arc-resisting, and highly resistant to moisture. In addition, it permanently positions the various components.

Primary terminals are silver plated to reduce contact resistance. Secondary terminals are of solderless clamp type. A positive-action, manually operated, short-circuiting switch is provided. The terminal cover is reversible and

## PROCESSING EQUIPMENT

is so constructed that it cannot be put in place with meters connected and short circuit switch closed.

Both primary and secondary coils are shaped like figure 8's for mechanical strength and high accuracy.

Description: Ratings: volts 5000 cycles, cycles 25-60. Impulse level, full-wave, 60 kv. Available in all A. S. A. preferred ratings, with single primary 10 to 800 amperes inclusive. Can be operated continuously at 150 per cent of primary rating, except the 800 ampere transformer which is designed for 125 per cent rating.

Essential name plate information is molded into the insulation. Thus, there is no name plate to be removed or lost. The smooth surface of the transformer provides an excellent place for stenciling identifying numbers or other information.

Transformer core is formed of high-permeability steel strips, interleaved for mechanical stability, and improved accuracy. The strips are held rigidly in place by a steel band welded to the steel-plate base. This interleaved core construction eliminates any possibility of reduction of accuracy resulting from mechanical shock caused by short circuits and careless handling. Dimensions are such that transformer can be interchanged with other transformers.

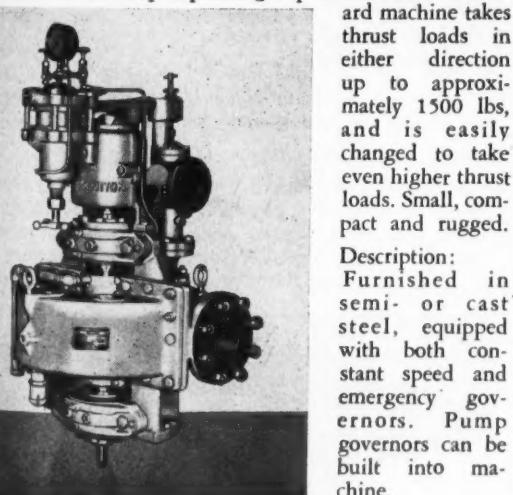
Source: JKM-3 transformer is built by General Electric Co., Dept. CP, Schenectady, N. Y. . . . or for more information check CP 2345 on handy form, pages 2 and 3.

### Develops ratings to 90 BHP to drive centrifugal pumps, other vertical units . . .

steam turbine takes thrust-loads in either direction up to approximately 1500 lbs

Uses: Vertical steam turbine for driving centrifugal pumps and other vertical units. For meeting requirements of practically any steam pressures and temperatures.

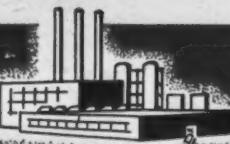
Features: Develops hp ratings up to 90 BHP. Standard machine takes thrust loads in either direction up to approximately 1500 lbs, and is easily changed to take even higher thrust loads. Small, compact and rugged.



90 BHP vertical turbine Bolting flange at lower part of casing permits bolting to flange of driven unit. Addition of this model extends manufacturer's line to 3 different frames, offering vertical turbines for wide hp and speed ranges.

Source: Whiton Machine Company, Dept. CP, New London, Conn. . . . or for more information check CP 2346 on handy form, pages 2 and 3.

## HOW LARGE CHEMICAL COMPANY Speeds Up



### Sodium Sulfide Production

## WITH NIAGARA FILTERS

One 57 sq. ft. Niagara Filter is now doing more work and better work on the filtration of sodium sulfide solution than was previously done on a 185 sq. ft. plate and frame filter. Flow rates of 60 gallons per square foot of filter area per hour are obtained.

And this rate is maintained for 16 to 19 hours before it is necessary to clean the Niagara Filter—a production of 48000 to 60000 gallons of sodium sulfide solution continuously without interruption.

What is more, Niagara Filters have made it possible to eliminate a 3 to 4 hour settling and decanting operation. Unsettled batches are now fed directly to the Niagara Filter, resulting in a more uniform product.

Reasons for the success of this application, as with all Niagara installations, are the process study that precedes recommendations and the design and construction of Niagara Pressure Leaf Filters.

Niagara Filters are generally of stainless steel construction throughout (other materials are available), providing the utmost in corrosion resistance. There is no wear on the solderless, stainless steel filter leaves (no cloths used), which provide flow rates 2 to 5 times higher than ordinary cloth-covered presses. Compact, vertical design saves on floor space and lends itself well to steam-jacketing. Entirely enclosed, these filters are leakproof, contamination-proof and ideal for handling toxic, flammable and explosive products.

Niagara Filters are showing the way to improved filtration and lower costs throughout the chemical industry. Products on which Niagara Filters are being successfully used, run the gamut from Aluminum acetate to Zinc chloride solution. Niagara filtration engineers will be glad to consult with you on your problems without obligation. Send coupon for literature on Niagara Filters in the Chemical Industry.



### PILOT PLANT RENTAL UNITS

You can convince yourself of the merits of Niagara Filters on your products before you go into a production set up. We have available, on a nominal rental basis, pilot-scale filters for small batch or test operations. We shall be glad to give you details of this plan on request.

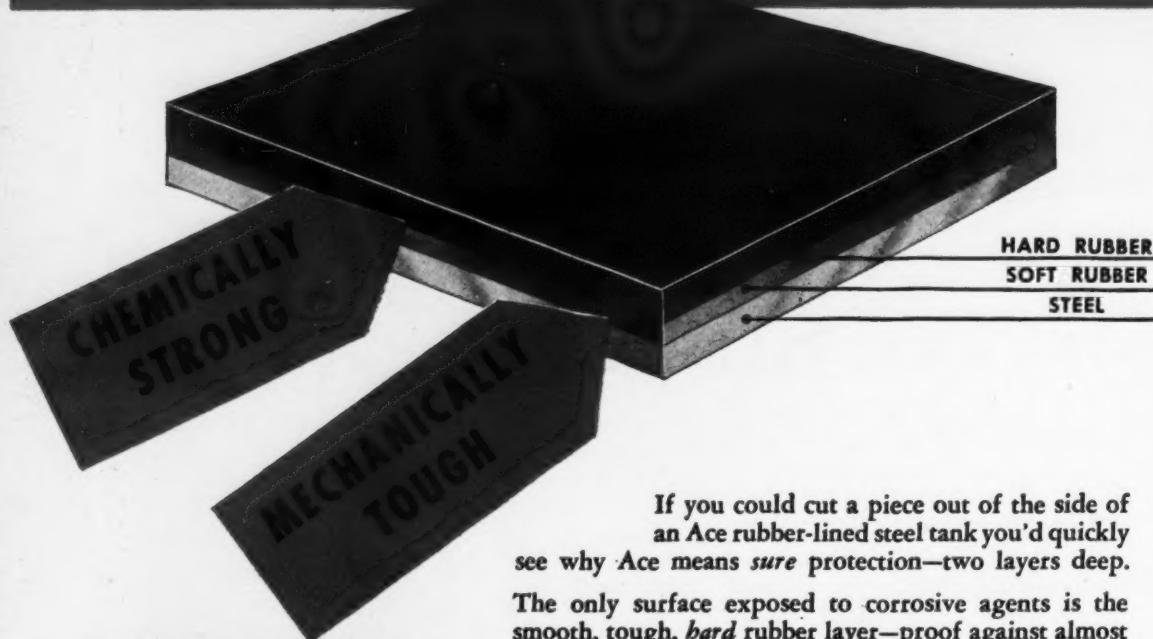


NIAGARA FILTER CORP., 3083 Main St., Buffalo, N. Y.  
Please send me details of Niagara Pilot Plant Filter rental  literature on Niagara Filters in the chemical industry .

NAME \_\_\_\_\_  
TITLE \_\_\_\_\_  
COMPANY \_\_\_\_\_  
ADDRESS \_\_\_\_\_  
CITY \_\_\_\_\_ STATE \_\_\_\_\_

When inquiring check CP 2347 on handy form, pgs. 2-3

# ACE Rubber-Protected EQUIPMENT

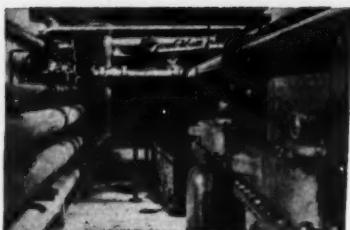


If you could cut a piece out of the side of an Ace rubber-lined steel tank you'd quickly see why Ace means *sure* protection—two layers deep.

The only surface exposed to corrosive agents is the smooth, tough, *hard* rubber layer—proof against almost every acid, alkali, and corrosive salt. It's also age-proof. Underneath is a layer of resilient, shock-resistant soft rubber that firmly bonds the hard rubber to the steel—a bond so strong the rubber can't be peeled off, and won't loosen or blister. There's extra protection at the seams, and in the well-rounded fillets and corners. Flanges, too, are rubber faced.

Ace also provides all-hard-rubber or all-soft-rubber linings, of natural or synthetic rubber. Ace rubber protected tanks, pumps, piping, valves, fittings and utensils are available in standard or special constructions for complete chemical processing, storage or circulating systems. Write for "Ace Rubber Protection," 64 pages of data you'll find valuable.

**ACE PLASTICS:** Investigate Ace corrosion-resistant plastics too, such as Ace Saran and Parian (polyethylene) pipe, tubing, fittings and molded parts. With both hard rubber and plastics to choose from, we'll be glad to recommend the *one best* material for any job of yours.



No "guess-work" in this installation—it's practically all Ace-protected. Here you see Ace rubber-lined pipe, fittings, valves and tanks and Ace all-hard-rubber pipe and fittings handling corrosive liquids.



Ace rubber coverings can be applied to intricate shapes, such as conveyor screws, agitators, etc. These typical mixer parts are lined with Neoprene.



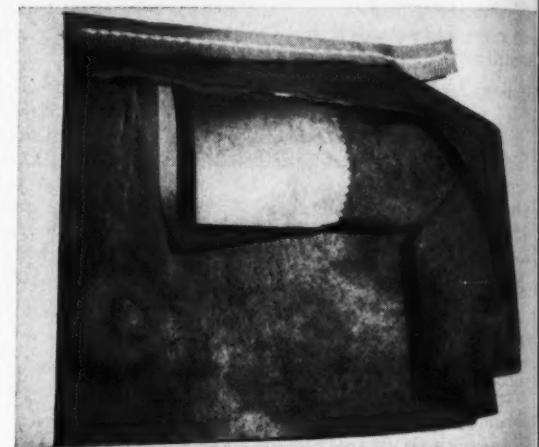
When inquiring check CP 2348 on handy form, pgs. 2-3

## PROCESSING EQUIPMENT

**Tests show that valve bag fills faster . . .**

tight closure prevents waste of product by sifting  
Uses: For packaging of materials which have tendency to sift.

Features: Maker reports that tests conducted by a leading fertilizer manufacturer showed that filling operations were stepped up 1 bag per minute over the conventional L. C. sleeve bag. Besides permitting faster flow of material being packed, valve of bag closes tightly to eliminate waste from sifting.



Valve of bag closes tightly

Description: Valve is adaptable to multiwall bags of any number of plies, and may be used on all standard filling machines.

Source: Shur-Close valve bag is made by Arkell and Smiths, Dept. CP, Canajoharie, N. Y. . . . or for more information check CP 2349 on handy form, pages 2 and 3.

**Chippers' goggle is tough, cool, comfortable . . .**

Super Armorplate plano lenses, compression-molded phenolic frame assure maximum protection

Uses: Chippers' goggle.

Features: Designed for cool, safe ventilation and greater side vision. Non-inflammable frame is moisture and heat-resistant, assures good fit, maximum protection. Eye-cups are individually molded, non-reflecting, with large, rounded, face-contacting edges, and are said to withstand



Improved chippers' goggle

stand "considerably more impact than conventional goggles."

Description: Compression-molded of strong, durable phenolic compound. Domed metal side screens provide

PROCESSING EQUIPMENT

greater cup-area. Chain bridge is enclosed in form-fit plastic-covered tube which rests lightly on the nose.

Large lens-rings. One-piece rubber headband. Fitted with regular Super Armorplate plano lenses. Six-curve clear or Calobar types are also available.

Source: American Optical Company, Dept. CP, Southbridge, Mass. . . . or for more information check CP 2350 on handy form, pages 2 and 3.

**Special air valve operates 2 air cylinders at once . . .**

3-position, 4-way unit features packless construction; has precision-ground and lapped taper plug.

Uses: To permit sequence operations with 2 double-acting air cylinders.

Features: Requires minimum maintenance. All working parts of valve may be removed without disconnecting air lines.

Description: Valve, designated as Model 50, is of packless plug-type construction. Brass taper plug is precision-ground and lapped into a high-tensile cast iron body. Made for foot mounting on any flat surface, it may be located anywhere on the machine, with operating handle in vertical or horizontal position.

Two cylinder ports and 1 exhaust port are grouped on one side of valve, with 2 cylinder ports and 1 intake port on opposite side. All ports are tapped for  $\frac{1}{4}$ " pipe.

With handle in first position, inlet is connected to ports 2 and 3; exhaust is connected to ports 1 and 4.

is connected to ports 1 and 4. In second position, inlet is connected to ports 2 and 4, and exhaust is connected to port 1 and 3. In third position, inlet is connected to ports 1 and 4, and exhaust is connected to ports 2 and 3.

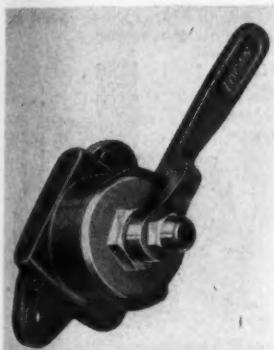
Source: Produced by Logansport Machine Co., Inc., Dept. CP, Logansport, Ind. . . . or for more information check CP 2351 on handy form, pages 2 and 3.

**Infra-red ovens speed baking, conserve space**

Interesting, 8-page, 2-color catalog contains full descriptions and many installation photos of infra-red ovens. Reported to speed baking and drying times, to conserve floor space, and to provide more accurate control of heating cycles, the ovens are supplied in any desired shape and size to accommodate pieces of odd dimensions. Charts demonstrate rapid attainment of curing temperatures, fine control of holding temperatures. Cut-away diagrams illustrate recirculation of heated air and spacing of lamps for most efficient heating.

Items pictured include overhead ovens, small floor ovens for odd jobs, large ovens for curing painted surfaces of large products, etc. "Infra-red Ovens", issued by Triangle Equipment Co., Inc., Dept. CP, 45 River Rd., Nutley, N. J. When inquiring check CP 2352 on handy form, pages 2 and 3.

JULY, 1949



3-position air valve

*Pretest your Conclusions* **WITH A**  
**BLAW-KNOX 5 GALLON AUTOCLAVE**  
**PILOT PLANT**

This compact and versatile unit is a link between laboratory determinations and first commercial runs. Money and time can be saved by making test runs in this simple and inexpensive pilot plant. It is designed for a wide range of investigations on synthetic resins, varnish, esterification, polymerization, oil bodying, and organic synthesis. Available for prompt shipment from stock.

**BLAW-KNOX DIVISION**  
**OF BLAW-KNOX COMPANY**  
**2076 Farmers Bank Bldg., Pittsburgh 22, Pa.**

When inquiring check CP 2353 on handy form, pgs. 2-3



**"JOHN CRANE" CHEM-LO-  
 FOR ALL CHEMICAL SERVICES**

"Chem-Lo packing on reciprocating and rotary pumps with 50% concentrated H<sub>2</sub>SO<sub>4</sub> has been very effective for the past ten months"—"Ten times more efficient than any previous packing for viscous di-acetone dope."

These reports on the revolutionary new "John Crane" chemically inert packing are typical. Engineers are finding

that Chem-Lo lasts longer on all chemical services. Why don't you pack a pump or small valve and see its efficient performance for yourself?

There's an interesting new free booklet available—describing Chem-Lo in detail.

WRITE FOR YOUR COPY.

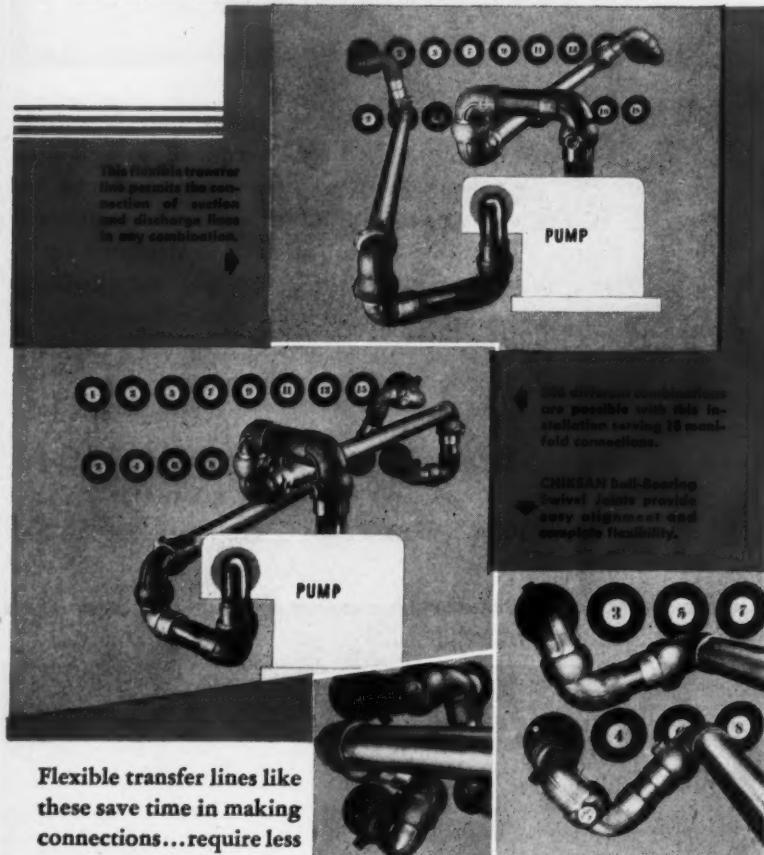
**CRANE PACKING COMPANY**

1821 CUYLER AVENUE

CHICAGO 13, ILLINOIS

When inquiring check CP 2354 on handy form, pgs. 2-3

*Save* TIME . . . EQUIPMENT . . .  
CONTAMINATION  
with CHIKSAN  
BALL-BEARING SWIVEL JOINTS



Flexible transfer lines like these save time in making connections...require less pipe, fittings and valves...eliminate contamination losses. Complete flexibility is provided by easy-turning CHIKSAN Ball-Bearing Swivel Joints. Installations like this quickly pay for themselves in the savings they effect...and they go on paying dividends long afterwards.

There are over 500 different Types, Styles and Sizes of CHIKSAN Ball-Bearing Swivel Joints... $\frac{1}{2}$ " to 12"...for operation at from 28" vacuum to 15,000 psi. If you handle liquids, vapors or gases into and out of storage...in processing operations...or through loading and unloading lines, Chiksan Engineers will gladly assist in planning installations to meet your requirements. Write for latest catalog.

REPRESENTATIVES IN PRINCIPAL CITIES

**CHIKSAN COMPANY**

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Chicago 3 • BREA, CALIFORNIA • New York 7

WELL EQUIPMENT MFG. CORP. HOUSTON 1, TEXAS

CHIKSAN EXPORT CO. BREA, CALIFORNIA • NEW YORK 7

BALL-BEARING SWIVEL JOINTS FOR ALL PURPOSES

When inquiring check CP 2355 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

15 thermodynamic charts for combustion processes

"Thermodynamic Charts for Combustion Processes" consists of 2 paper-covered volumes in ring-type bindings. Part I contains 76-page text; Part II presents 15 charts and a 24-page tabular appendix of equilibrium gas compositions and generalized thermodynamic data.

Charts unfold to wall-size. A 28 x 33" modified-air chart covers "Thermodynamic Properties of Gasoline-Air Mixtures or Products of Combustion Thereof." This includes various air-fuel ratios and proportions of burned and unburned gases. A series of burned-mixture charts is also presented.

Principles of cycle calculation, with examples based on older cycles, and development of methods for some of the new jet-propulsion cycles, are set forth. References, author reference index, and alphabetic index of contents are included. Authored by MIT faculty members H. C. Hottel, G. C. Williams and C. N. Satterfield. Part I \$2.60; Part II \$2.40.

Remit direct to John Wiley & Sons, Inc., Dept. CP, 440 Fourth Ave., New York 16, N. Y. Or, when inquiring specify CP 2356 on handy form, pages 2 and 3.

Construction of cooling towers provides high performance . . .

wood or steel tower has removable nail-less filling, balanced low-pressure spray, access ports

Uses: For cooling of water.

Features: These medium-to-large-capacity towers have most of the construction features of heavy-duty equipment. Because of this, they give excellent performance with low maintenance and long life.

Description: Verflow cooling towers are available in wood or steel. Wood or spray fill is available with either

type. Steel tower framework uses rolled steel structural sections throughout, with angle and tee section columns and girts and welded anchor plates on columns. Heavy truss at top of tower lends rigidity; diagonal bracing provides added strength.

Casing is made of heavy-gauge sheet steel sections bolted to framework and sealed with rubber gaskets and steel channel. Fan deck is sheet steel and has heavy

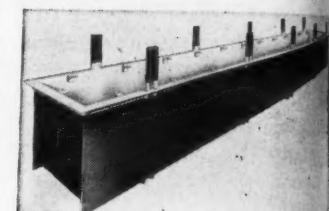
steel fan cylinder bolted on. There is a large removable access port at distribution system level. Up swinging hinged louver frame gives easy access to interior of tower.

Basin is extra-heavy sheet steel. Basin sidewalls bolted to basin floor with rubber gasket between. Ball-type float

When inquiring check CP 2357 on handy form, pgs. 2-3

*Engineered*

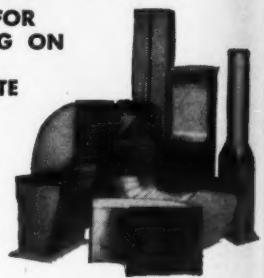
RUBBER INSULATED  
EQUIPMENT FOR  
HANDLING CORROSIVES



PROCESSING TANKS

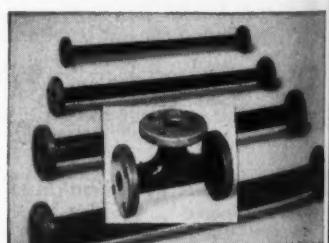
Any size, any shape, open or closed, fabricated and/or rubber lined for all chemical processing.

WRITE FOR  
CATALOG ON  
OUR  
COMPLETE  
LINE



EXHAUST SYSTEMS

Ducts, vents, hoods, housings, fabricated and/or rubber lined. All joints companion flanged.



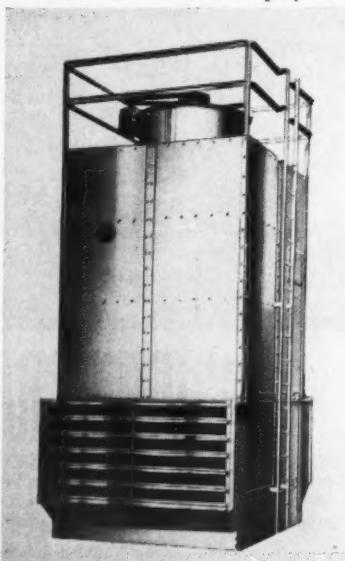
PIPE and FITTINGS

Flanged type, lined with natural or synthetic rubber. Steel, cast or wrought iron. 1 1/2" LD. and up.

AUTOMOTIVE RUBBER CO., INC.

8601 EPWORTH BOULEVARD

DETROIT 4, MICHIGAN



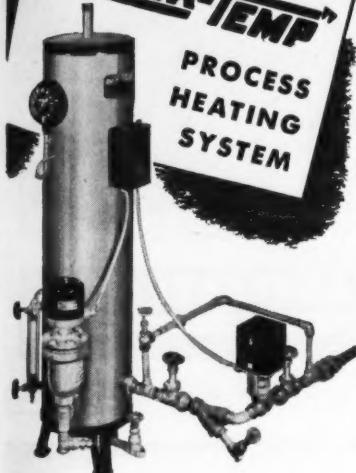
Steel cooling tower

YOU CAN TRIM  
PROCESSING COSTS—

NOW

by installing a SCHaub  
"QUIK-TEMP"

PROCESS  
HEATING  
SYSTEM



Only 'QUIK-TEMP' Gives All of  
These Guaranteed Results:

- More Production Through Higher Rate of Heat Transfer
- Saves Steam and Fuel
- Eliminates Trap Maintenance

Increase profit margins by slashing processing costs with Schaub "QUIK-TEMP". Faster heat up assures more output from the same machines. WE GUARANTEE AT LEAST 10% INCREASE IN OUTPUT — AT NO EXTRA COST!

Higher sustained temperatures increase equipment efficiency. Steam traps are eliminated. That means no more balky traps to cause shutdowns — no wasted steam — no costly trap maintenance.

"QUIK-TEMP" works efficiently with existing steam-using equipment.

Write immediately for full information...and data on possible savings.

FRED H. SCHaub  
ENGINEERING CO., Inc.

2118 South Marshall Blvd., Chicago 23, Illinois

When inquiring check CP 2358  
on handy form, pgs. 2-3

## PROCESSING EQUIPMENT

valve for automatic water make up. Umbrella-covered overflow pipe is removable for draining basin. Cast iron sump with screen and anti-cavitation plate. Special corrosion-resistant paint is used.

Wood towers are ruggedly built of heart-quality redwood. All pieces joined by galvanized bolts — no nails are used for structural support. Units have double casing with air space between. Casing walls are furnished in easily-handled, fabricated panels. Louvers slip-fit into independent machined louver posts. Basin is extra-large for ample water storage. Most constructional features of steel towers are maintained in wooden structures.

Lifetime nail-less filling employed in both types is easily removed and re-installed. Balanced spray system uses special spray nozzles that give fine water-breakup at low pressure. Triple-effect drift eliminators are slip-fit redwood strips in heavy cast iron spacers.

Steel towers are made in sizes ranging from 6'1" wide x 6'4" long x 14'7" high to 14'1" wide x 16'4" long x 19'5" high. Wood towers are 6'0" wide x 7'3" long x 15'3" high to 14'0" wide x 17'3" long x 19'9" high.

Source: Products of The Marley Company, Inc., Dept. CP, Kansas City 15, Kansas . . . or for more information check CP 2359 on handy form, pages 2 and 3.

### Shut-off valve handles butane, many other LPG products . . .

operator can throttle or close valve without shock; valve serviced without removal from line

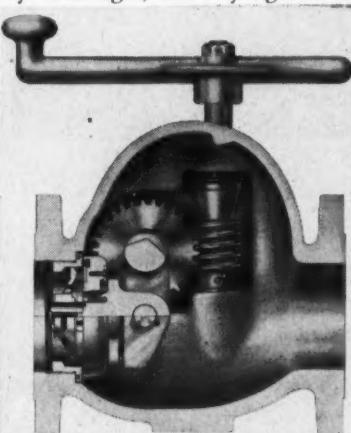
Uses: Installed to handle butane and other LPG products, it has given excellent service. Diesel, stove and fuel oil, gasoline, hot wax and Alkane are handled equally well, particularly on tank-car loading racks.

Features: Double-seal disc and seats allow operator to throttle or close valve without shock. Special synthetic rubber seals "positively" seal tight, and stay tight under extreme conditions. Temperature ranges are from -40°F to 300°F. Loss in head is reduced to a minimum with straight through ports.

Description: Basically, this is a check valve, with main and primary seats and discs, worm-and-gear driven to provide positive control in opening and closing. Torque, thus applied, enables valve to open easily against rated pressures with manual control in closing.

A side-access door allows inspection and reconditioning without removing valve from line. Valves are available in 2, 3 and 4" sizes for 150 and 300-lb pressures.

Source: Tork-Master Co., Inc., Dept. CP, 1624 Seabright Ave., Long Beach 13, Cal. . . . or for more information check CP 2360 on handy form, pages 2 and 3.



Positive shut-off valve is  
worm-and-gear driven

FOR  
**FLAMMABLE  
LIQUID FIRES**

GASOLINE • NAPHTHA • BENZENE  
ALCOHOL • LACQUER • PAINT  
VARNISH • SOLVENTS • ETC.

PIONEERS OF DRY CHEMICAL  
**ANSUL**  
U.S. PAT. OFF.  
FIRE EXTINGUISHING EQUIPMENT

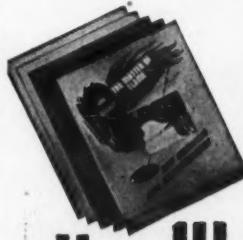
**DRY CHEMICAL**

ANSUL MODEL 30

## FIRE EXTINGUISHERS ARE YOUR **BEST** PROTECTION

...and most economical, too! Tests conducted by impartial, nationally recognized approval laboratories have proved the superiority of Ansul Dry Chemical Fire Extinguishers on **Flammable Liquid Fires**.

Processing, handling, transferring, and storing of flammable liquids and gases involve fire hazards which demand the best in first-aid fire protection. For years the major chemical and petroleum processing plants have been using Ansul Extinguishers as their first line of fire defense. There is a reason . . .



Get the facts. Send for your copy of File No. 403. You'll also receive our latest literature together with comparative rating charts for the various types of fire extinguishers.

- Safe for use on electric and fire, fuel. Even high voltages are not conducted by dry chemical stream.
- Can be recharged at scene of fire furnishing continuing protection.
- Annual recharging is not necessary, low maintenance costs.
- Longer range stream of dry chemical is effective in winds and drafts.
- Ansul Dry Chemical is non-corrosive, non-toxic.
- Listed and Approved by Underwriters Laboratories and Factory Mutual Laboratories.

**ANSUL CHEMICAL COMPANY**  
FIRE EXTINGUISHER DIVISION MARINETTE, WISCONSIN  
DISTRIBUTORS IN PRINCIPAL CITIES IN THE UNITED STATES, CANADA AND OTHER COUNTRIES

When inquiring check CP 2361 on handy form, pgs. 2-3

## SAVE COOLING WATER

Get many other Benefits and Cost Savings

Niagara Aero Heat Exchangers provide faster and more accurate cooling to specified temperatures for liquids in many industrial processes. They help lower production costs.

Cooling by the evaporative principle, they transfer heat to air, which is easily disposed of and consume less than 5% of water used in conventional cooling methods. A Niagara Aero Heat Exchanger replaces both shell-and-tube cooler and cooling tower, and saves piping and pumping. Its savings quickly return its cost.

Write for Bulletin No. 96

### NIAGARA BLOWER COMPANY

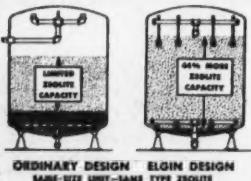
Over 35 Years of Service in Industrial Air Engineering  
Dept. CP 405 Lexington Ave., New York 17, N. Y.  
District Engineers in Principal Cities

When inquiring check CP 2362 on handy form, pgs. 2-3

## PAYS DIVIDENDS

—extra dividends when it's softened the ELGIN way!

The economies that soft water effects in processing, feedwater treating and operating costs are still further increased when you use the Elgin "Double-Check" Zeolite Softener. It gives —



44%  
MORE  
SOFT  
WATER

The diagrams tell the story. Elgin's exclusive "Double-Check" manifolds prevent escape of zeolite . . . permit use of more zeolite in same size softener . . . assure faster, better back-washing; more efficient operation. Thousands of installations prove that the Elgin provides up to 44% more soft water per regeneration than other softeners of equal size using the same kind of zeolite. Let us prove this. Ask for Bulletin 607.

Extra gallons of soft water from your present softener.

Yes, this Elgin development is adaptable to *all* makes of existing softeners. Installed in softeners that have been refilled with Elgin high capacity type zeolites, soft water output has been stepped up 3 to 10 times in many plants. Let us show you what can be done in yours.

### ELGIN SOFTENER CORPORATION

160 North Grove Ave., Elgin, Ill.

When inquiring check CP 2363 on handy form, pgs. 2-3



Niagara Aero Heat Exchanger—Patented

Successful applications include control of temperatures for jacket coolants for engines, hydraulic and pneumatic equipment, transformers and electronic sets, heat treating of metals, wire drawing, heat processing in chemical plants, and special industrial equipment.

## PROCESSING EQUIPMENT

### Bearing surfaces stand up under heavy loads

Use of aluminum-bronze welded overlay on carbon steel backing to produce long-lasting bearing surfaces is described in illustrated brochure. Bearing surfaces of carriage knees for mobile saws used in lumber industries wore badly at point of maximum overhang, until steel ways were replaced with machined overlay.

Uses of other welding materials for welding silicon bronze sheets amplified. Jan., 1949, issue of "Welding News", issued by Ampco Metal, Inc., Dept. CP, Dept. WN-1, Milwaukee 4, Wis. When inquiring specify CP 2364 on handy form, pages 2 and 3.

### Packaged motor-generator set supplies 300 kw DC . . .

unit converts 2300 volts AC to 250 volts DC; has rigid skid-base mounting

Uses: To supply 250 volts DC from high tension AC lines.

Features: Unit is exceptionally compact. May be moved and relocated easily, because of rigid skid-base mounting.

Description: Generator is driven by 2300 volt AC, 450 hp synchronous motor. Output of units is 250 volts DC, rated at 300 kw. Generator is reported to withstand 25%



Compact DC motor generator

overload for 2 hours, and 100% overload for 1 minute. Set is 43" high, 7' wide, 16' long, and weighs 19,000 lbs. Switchgear, controllers, and other accessories are metal-enclosed. Synchronous motor derives its excitation from generator circuit; generator is compound-wound, self-excited. Units are equipped with anti-friction bearings and are flexibly coupled.

Source: Product of Reliance Electric & Engineering Co., Dept. CP, 1088 Ivanhoe Rd., Cleveland 10, O. . . . or for more information check CP 2365 on handy form, pages 2 and 3.

### Acid flows without splashing from tilted carboys . . .

tilting device and special spout assure steady 5-gpm flow without accidents

Uses: For greater safety when tilting and draining carboys of acids and other liquids.

Features: Fast, safe, convenient one-man operation,

## HIGH PRESSURE—HIGH TEMPERATURE AUTOCLAVE

15 gallon capacity (15 1/4" ID x 1 1/8" wall).

1500 #/□" working pressure.

650° F. working temperature.

Solid stainless steel, Columbium stabilized, stress relieved in Annealing Furnace.

All welds X-Rayed.

Steam or Dowtherm Jacket.

ASME code stamp (Parag. U-68).

This Autoclave, manufactured for one of the largest chemical processing plants in the United States, is testimony to the varied and competent engineering skills of Alloy Fabricators craftsmen.

Our staff of technical experts are prepared to specifically design equipment for a laboratory or a complete plant.



## ALLOY FABRICATORS

DIVISION OF CONTINENTAL COPPER AND STEEL INDUSTRIES, INC.

PERTH AMBOY - NEW JERSEY



When inquiring check CP 2366 on handy form, pgs. 2-3

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### WHY COUPLING USERS SPECIFY



## WALDRON

Improved  
Gear Type

Users recognize the WALDRON as the most advanced design of the Gear Type. For design details, ratings, service factors, etc., write for our descriptive Catalog No. 57.

From a standpoint of shaft size, horsepower, speed and service — comparing a WALDRON Gear Type with ordinary types make the choice easy. Careful buyers now specify WALDRON — for WALDRON means Gear Type and Gear Type means WALDRON.

## JOHN WALDRON CORP.

Main Office and Works  
New Brunswick,  
New Jersey

## COUPLINGS

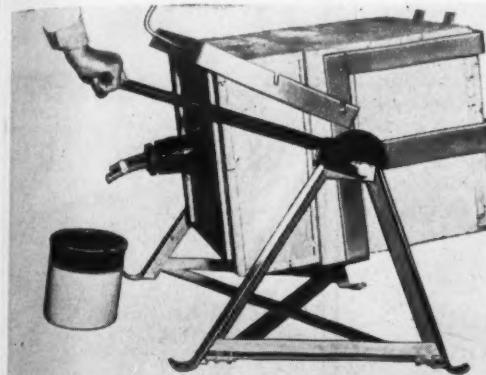
Sales Representatives in Principal Cities.

When inquiring check CP 2367 on handy form, pgs. 2-3

CHEMICAL PROCESSING Preview

## PROCESSING EQUIPMENT

without spouting or splashing. Operator remains at safe distance, tilting carboy by means of long handle. Carboy can be locked at any angle, making it unnecessary to return



Carboy tilter and pouring spout

it to vertical position between pourings; this eliminates waste motion when filling a number of small containers in rapid succession.

Description: Consists of 2 separate units: a tilter and a pouring spout. Cradle and supporting base of tilter are structural steel, all members welded or riveted. Spout has special air vent to assure even flowage, and is acid-resistant rubber and plastic tubing. Flow-capacity is 5 gpm.

Source: General Scientific Equipment Company, Dept. CP, 2700 W. Huntingdon St., Philadelphia 32, Pa. . . . or for more information check CP 2368 on handy form, pages 2 and 3.

### Stacking boxes may be lifted by fork truck from any side . . .

load capacity of corrugated units may be specified

Uses: To carry and store objects of odd shapes, small size, etc.

Features: Provision is made for entrance of lift fork tines from all sides of boxes.

Description: Corrugated, all-steel, welded stacking

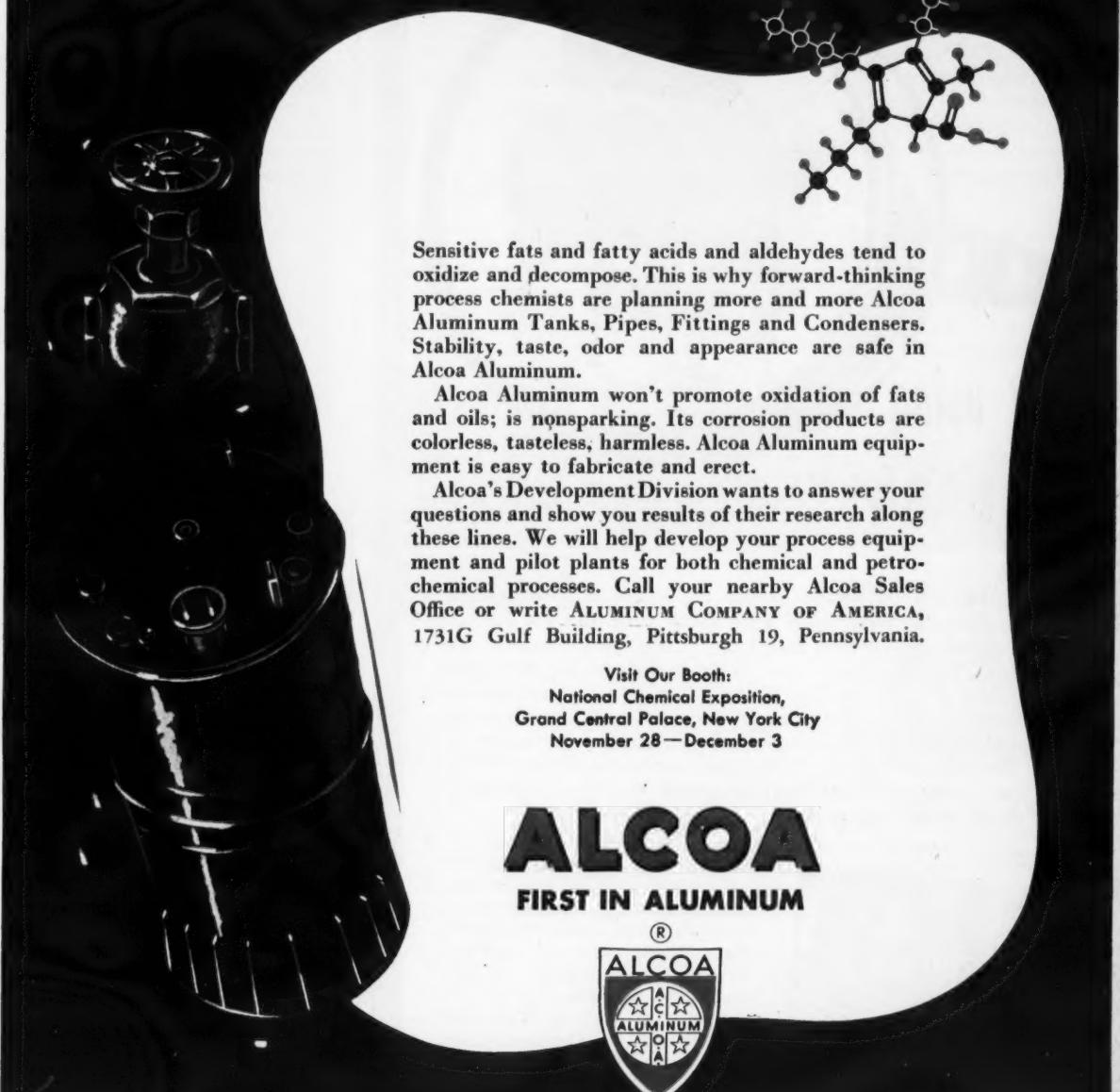


Stacking boxes are built to specifications. Boxes are built to specified dimensions. Load capacity may also be specified. Crane lugs, stacking brackets, and channel runners are optional.

Source: Produced by Palmer-Shile Co., Dept. CP, 1600 Fullerton Ave., Detroit 27, Mich. . . . or for more information check CP 2369 on handy form, pages 2 and 3.

# aluminum protects . . .

## PROTECTS THESE SUSCEPTIBLE CHARACTERS



Sensitive fats and fatty acids and aldehydes tend to oxidize and decompose. This is why forward-thinking process chemists are planning more and more Alcoa Aluminum Tanks, Pipes, Fittings and Condensers. Stability, taste, odor and appearance are safe in Alcoa Aluminum.

Alcoa Aluminum won't promote oxidation of fats and oils; is nonsparking. Its corrosion products are colorless, tasteless, harmless. Alcoa Aluminum equipment is easy to fabricate and erect.

Alcoa's Development Division wants to answer your questions and show you results of their research along these lines. We will help develop your process equipment and pilot plants for both chemical and petrochemical processes. Call your nearby Alcoa Sales Office or write ALUMINUM COMPANY OF AMERICA, 1731G Gulf Building, Pittsburgh 19, Pennsylvania.

Visit Our Booth:  
National Chemical Exposition,  
Grand Central Palace, New York City  
November 28—December 3

# ALCOA

FIRST IN ALUMINUM



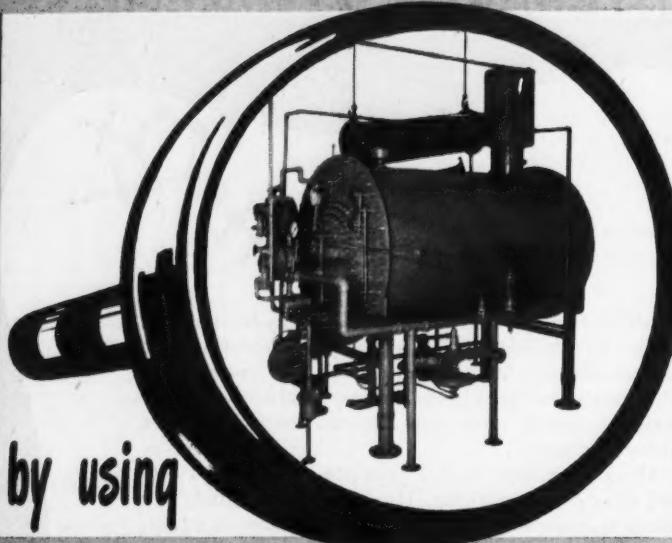
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When inquiring check CP 2370 on handy form, pgs. 2-3

# How RCA PROTECTS PICTURE CLARITY



by using

## BARNSTEAD PURE WATER

Offhand, Pure Water would not seem to be connected to the picture clarity of a television tube. But the fluorescent material which forms the screen, on the face of the tube, is floated into place in water suspension, and clings to the glass by molecular attraction — as a uniform and perfect coating. Any impurities present in the water can contaminate the material and impair the perfection of the television image. RCA guards against such possibilities by using twice-distilled Barnstead Water of extremely high unvarying purity.

There, as in hundreds of other little-known processes in the chemical, food, pharmaceutical, electronic and industrial fields, Pure Water plays its unobtrusive, but important part. Whenever there is such a need you are apt to find a Barnstead Water Still or Demineralizer. For Barnstead has been solving industries' needs for Pure Water exclusively since 1878.

The two special horizontal type stills shown above were especially designed and built by Barnstead Engineers, for the RCA Television Tube plant at Lancaster, Pa.

**Barnstead**  
STILL & STERILIZER CO.

66 Lanesville Terrace, Forest Hills  
Boston 31, Mass.

When inquiring check CP 2371 on handy form, pgs. 2-3

## PROCESSING EQUIPMENT

### Control bin-valves with pneumatic cylinders

Heavy duty pneumatic cylinders are illustrated and described in 2-page brochure. Case history relates that pneumatic cylinders successfully control bin valves which feed powdered resins to phonograph record molds. States that control of this operation must be quick and accurate. Installation of cylinders is discussed and cylinders are specified.

Bul. CS 449, issued by Ledeen Mfg. Co., Dept. CP, 1600 So. San Pedro St., Los Angeles 15, Calif. When inquiring specify CP 2372 on handy form, pages 2 and 3.

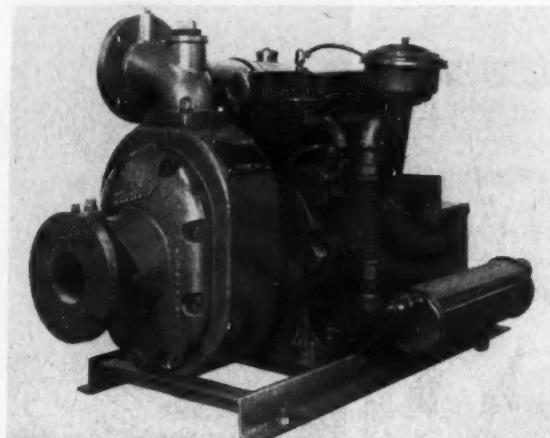
### Pump solvents, other volatiles with self-priming centrifugal tank-truck pump . . .

available in 2 and 3" sizes, high or low head, with capacities from 20 to 200 gpm

Uses: To pump oils, solvents, other liquids from truck or trailer tanks.

Features: Readily handles liquids with viscosities up to 550 SSU. Self-priming, will not vapor-lock.

Description: Pump, complete with engine, is supplied in 2 and 3" sizes, with flanged or threaded connections.



Complete tank truck pumping unit

High or low-head operation is available, with capacities from 20 to 200 gpm. Large muffler is supplied with pump engine. Push button starter eliminates cranking.

Patented "diffuser" method of operation employs free-flowing design. Pump does not depend on close tolerances or sliding surfaces for its pumping action, thus passes welding shot and other particles without damage.

Dripless seal on pump shaft is self-compensating for internal pump pressures.

Source: Product of Marlow Pumps, Dept. CP, 568 Greenwood Ave., Ridgewood, N. J. . . . or for more information check CP 2373 on handy form, pages 2 and 3.

### Weigh suspended crane-loads with hydraulic scale . . .

zero adjustment eliminates need for tare readings; units have accuracy of 0.2% full scale

Uses: To weigh all loads handled by cranes.

Features: Accurate within 1% of reading, or 0.2% of

## What's "A New Solution"?

It's an article in  
**CHEMICAL  
PROCESSING  
Preview**  
describing a new way  
of solving a tough  
plant operating  
problem.

In each  
issue you will find  
specific "case  
histories" showing  
how these processing  
problems were solved.

Each article  
... states the  
operating problem  
... explains the  
process used  
... gives details of  
how problem was  
solved  
... shows results  
secured.

Take a look at  
"New Solutions" articles beginning on page 6 in this issue—they might suggest a "solution" for some of your tough processing problems.



# VALUABLE

## STAINLESS STEEL TUBING BOOK



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• This new book contains 28 pages of useful information on modern Republic ELECTRUNITE Stainless Steel Tubing and Pipe. Included in its contents are handy stainless steel analysis tables, comparative corrosion-resistance data, application illustrations and a complete section on stainless steel tube fabrication.

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Export Dept: Chrysler Bldg., New York 17, N. Y.



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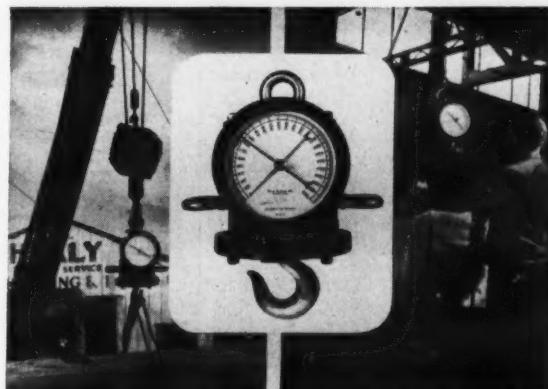
When inquiring check CP 2374  
on handy form, pgs. 2-3

## PROCESSING EQUIPMENT

capacity. Zero adjustment eliminates need for tare readings.

Description: New scales are available in 3 models. Model EU-20-T is supplied in any one of 8 load capacities: 0-1000, 0-2000, 0-3000, 0-4000, 0-5000, 0-6000, 0-8000, and 0-10,000 lbs. Model EU-40-T is furnished in load ranges of 0-12,000, 0-15,000, and 0-20,000 lbs. Model EU-60-T is available for use with loads from 0-25,000 lbs. or from 0-30,000 lbs.

Although designed primarily for weighing suspended



Hydraulic crane scale weighs objects of all descriptions

crane-loads, they are easily adaptable to other force or load measuring applications. Basic feature is Type EU Emery Hydraulic cell, which converts force into fluid pressure, which registers on pressure indicator calibrated in lbs. of load.

Heavy hook and large eyebolt are swivel mounted. Red maximum pointer can be furnished on request.

Source: Product of The A. H. Emery Co., Dept. CP, Stamford, Conn. . . . or for more information check CP 2375 on handy form, pages 2 and 3.

### Plug-in leads have flexible plastic insulation . . .

material withstands temperatures up to 170°F; resists oil, grease, aging and sunlight

Uses: To simplify electrical wiring.

Features: Plastic is molded snugly about wire, is practically irremovable. Jackpins are precisely positioned on all leads.

Description: Plastic can be molded around any type of insulated stranded wire. Material has higher dielectric



Flexible insulation on plastic leads

inserts and other fittings are crimped and molded to suit individual specifications. Wide variety of colors is available for matching or coding.

Source: Produced by Aircraft-Marine Products, Inc., Dept. CP, 1559 N. 4th St., Harrisburg, Pa. . . . or for more information check CP 2376 on handy form, pages 2 and 3.

## THE "UNUSUAL..." in ACID-PROOFING PROBLEMS is NOT UNUSUAL to Atlas Engineers!

To our staff of chemical and construction engineers, problems without precedent are a matter of routine. With benefit of long experience in about every field of industry and with every type of industrially used corrosive, they are invariably solved with economy of time and cost. • No matter how "different" you believe your corrosion problem to be, call in the nearest Atlas representative. • Our engineers will study it, make recommendations and submit plans and estimates—without obligation.

Atlas Construction, serving in the largest chemical and steel plants—and in food production, textile, tanning and other industries, is proof against, not merely "resistant to" acids and alkalies, alone or in combination, at any practical working temperature—also against

solvents, corrosive salts, fats and oils, animal wastes, cleaning solutions, steam and hot water. • Atlas Service includes cements, plastic linings, protective coatings, and jointing materials . . . design . . . and installation, when desired.



Ultra-high temperature of  
exhaust acid fumes doesn't  
bother this stack, lined with  
acid-proof brick, joined with  
Atlas VITREX.



And this trench, laid with  
acid-proof brick, joined with  
Atlas ALKOR cement, protects  
building foundations from  
possible damage from  
leakage of corrosives.



Hydrochloric acid, contaminated with organic acids and solvents, is contained in the 3000 gal. concrete tanks. Their Atlas construction includes Carbo-KOREZ, Tegul-VITREO-BOND and Atlasiene lining—with Dual Construction (pat.).

**Atlas Construction is used in**  
**TANKS • FLOORS • TOWERS • SATURATORS • FUME  
DUCTS • TRENCHES • DISPOSAL AND NEUTRALIZING PITS**  
Write for Technical Bulletin C3-1

**THE**  
**Atlas Mineral**

**PRODUCTS COMPANY OF PENNA.  
MERTZTOWN, PENNA.**

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When inquiring check CP 2377 on handy form, pgs. 2-3



## NEVA-CLOG

Permanent Metallic Filter Medium  
with Better Resistance to Corrosion  
Erosion, Heat, Pressure, Blinding

### RIGID - DURABLE NON-PLUGGING EASY TO APPLY

#### CLEAN and BACKWASH

Neva-Clog effectively holds back solids and passes clear liquids, without blinding or clogging; permits use of filter aids. Removal of solids by sluicing, backwashing or blow-back is quick and easy. Outlasts woven metal screens; withstands corrosion, erosion, scraping, chafing, pressure and temperature better than any other filter medium; is easy to insert in any equipment.

Neva-Clog can be fabricated of any metal in flat plates, discs, cylinders or other shapes for any type of filter or for bases in ion exchange or other packed towers, percolation extraction, absorption, separation and other equipment. Write for literature and sample.

Enlarged view showing general construction of Neva-Clog; two stainless steel sheets, arranged to give high flow rates, effective filtration and full retention of solids on the surface. Above — Neva-Clog applied on a large Valley Filter Leaf.

W. S. ROCKWELL COMPANY

220 ELIOT STREET • FAIRFIELD, CONN.

When inquiring check CP 2378 on handy form, pgs. 2-3

### EFFICIENCY IS WITH THE HODGSON BARREL CART



Easy to handle  
Decreases injuries  
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Variety of uses  
Reasonably priced  
Cuts waste  
No lifting  
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An all-purpose drum handler for

MOVING  
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7th & Rockford

Phone 2-9419

Tulsa, Oklahoma

Dealers Inquiries Invited

When inquiring check CP 2379 on handy form, pgs. 2-3

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### PROCESSING EQUIPMENT

Open-side pallet-rack eases  
tiering unit-loads of any  
shape or size . . .

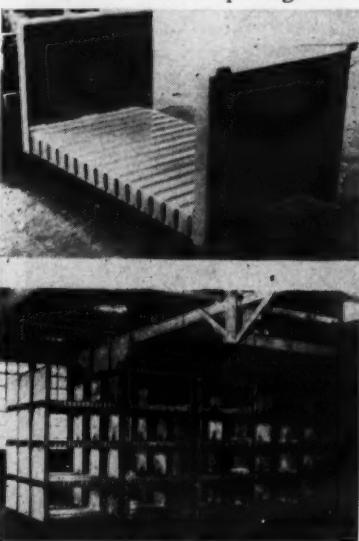
sturdy construction permits han-  
dling 12-ton loads

Uses: To handle and store loads  
of all descriptions.

Features: Combines advantages of  
both pallets and racks.

Description: As illustrated, racks  
are open-sided to facilitate loading  
and unloading materials.

Upper photograph shows pallet rack  
being moved by fork truck, demon-  
strating ease of transporting units.



MANY  
INDUSTRIAL  
ROLL  
PROBLEMS  
are solved  
by using

## SHAF-TITE\* ROLLS

Many patented con-  
structions provide  
strongest possible shaft  
setting. Your choice  
of many different  
types and materials—  
wood, rubber, iron,  
brass, stainless steel  
plastic, etc. Whatever  
your roll problem, put  
it up to Rodney Hunt.



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Most complete publication  
of its kind  
Industrial Roll Division  
RODNEY HUNT MACHINE CO.  
373 Maple Street, Orange, Mass.

When inquiring check CP 2381 on handy form, pgs. 2-3



### BOWSER FOG THROWER

#### PROTECTS ECONOMICALLY

- Approved, Class A, B and C Fires
- No Recharging or Service Costs
- The First Cost Is The Last
- Serves Area of 7,855 Sq. Ft.
- Unlimited Supply of Extinguishing Agent

FOG  
IS FASTER

### MINIMIZES WATER DAMAGE

Clean water fog, without expendable chemicals, saves property. Often water or soda-acid destroys as much as the fire. Bowser water fog is better on oil and electrical fires. Smothering fog extinguishes fast, absorbs heat, knocks down gases and dust. Bowser Fog Throwers operate from piped water supply. Careful analysis will convince you that Bowser is right for your fire hazards.

Write for Fog Story, Catalog and Prices

BOWSER, INC.—Fire Equipment Division  
1328 E. CREIGHTON AVE. • FORT WAYNE 2, INDIANA

When inquiring check CP 2382 on handy form, pgs. 2-3

CHEMICAL PROCESSING Previous

## Convention & Exhibit Schedule

Sept. 6-8. American Institute of Chemical Engineers (Regional), Mount Royal Hotel, Montreal, Quebec.

Sept. 12-16. National Instrument Conference & Exhibit, Municipal Auditorium, St. Louis.

Sept. 14-16. National Petroleum Association, Traymore Hotel, Atlantic City.

Sept. 18-23. American Chemical Society, Atlantic City.

Oct. 4-7. Society of Industrial Packaging & Materials Handling Engineers (4th Annual Exposition), Convention Hall, Detroit.

Oct. 13-15. American Association of Textile Chemists and Colorists, Chalfonte-Haddon Hall, Atlantic City.

Oct. 17-21. National Metal Exposition, Cleveland.

Oct. 24-26. Packaging Institute (Annual Forum), Commodore Hotel, New York.

Oct. 24-28. Nat'l. Safety Congress Exp., Chicago.

Oct. 31-Nov. 1. National Paint, Varnish & Lacquer Assn., Chalfonte-Haddon Hall, Atlantic City.

Oct. 31-Nov. 2. American Oil Chemists Society, Edgewater Beach Hotel, Chicago.

Oct. 31-Nov. 2. Packaging Machinery Mfrs. Institute, Edgewater Beach Hotel, Chicago.

Nov. 1-5. Pacific Chemical Exposition, Civic Auditorium, San Francisco.

Nov. 3-5. Federation of Paint and Varnish Production Clubs, Chalfonte-Haddon Hall, Atlantic City.

Nov. 7-10. American Petroleum Institute, Chicago.

Nov. 14-18. 6th All-industry Refrigeration & Air Conditioning Exposition, Auditorium, Atlantic City.

Nov. 28-Dec. 3. Chemical Industries Exposition, Grand Central Palace, New York.

Dec. 4-7. American Institute of Chemical Engineers (Annual), William Penn Hotel, Pittsburgh.

Dec. 29-30. American Chemical Society, Division of Industrial & Engineering Chemistry, Columbus, Ohio.

## 1950

Mar. 26-30. American Chemical Society (117th National Meeting), Houston, Texas.

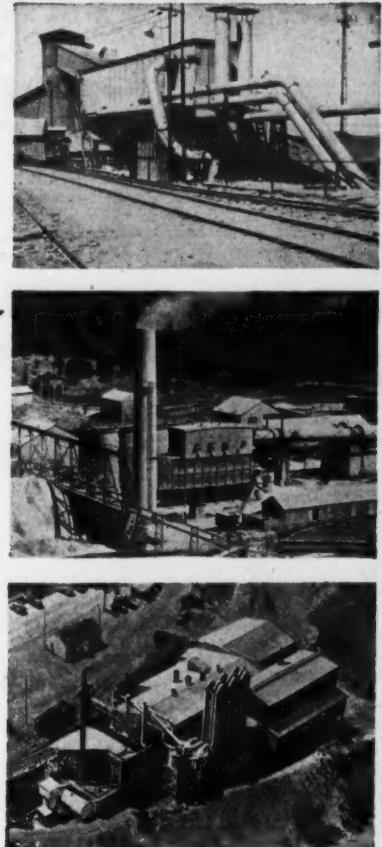
April 9-13. American Chemical Society (117th National Meeting), Philadelphia.

April 16-20. American Chemical Society (117th National Meeting), Detroit.

June 8-10. American Institute of Chemical Engineers (Regional), Hotel Statler, Boston.

Sept. 3-8. American Chemical Society (118th National Meeting), Chicago.

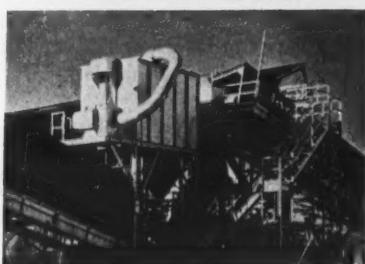
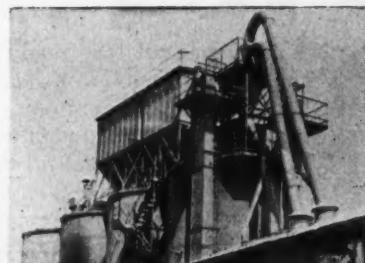
Sept. 10-13. American Institute of Chemical Engineers (Regional), Minneapolis.



## ... for Star Performance at Low Cost

1. Basic unit compartment houses 78 cylindrical cloth bags — fully distended by upward inside air flow.
2. Shaking and cleaning involves only one compartment at a time, and only a few seconds out of each hour of operation.
3. Variable timing of cleaning cycle according to dust load insures constant volume of air handled and of dust collected.
4. During shaking period air flow is reversed, loosening dust and accelerating its descent into the hopper.
5. Any compartment may be cut out of operation for repair (from the clean air side) with all other compartments continuing in operation. Adjustment of shaking timer for dust loading can be made in a few minutes without shutting down.

Norblo equipment is completely designed and fabricated in our own shops and sold on the basis of guaranteed performance. If you need dust collection for production, for salvage, for good housekeeping ask Norblo engineers what they can do for you. Let us send you Norblo Bulletin 162-4.



**The Northern Blower Company**  
6419 BARBERTON AVENUE • CLEVELAND 2, OHIO

Automatic and Standard Bag Type Fume and Dust Collectors  
Norblo Centrifugal and Hydraulic Collectors  
Cement Air Cooling Systems, Exhaust Fans

When inquiring check CP 2383 on handy form, pgs. 2-3

# NEW TRISTAND VISE has Handy Tool Tray

RIDGID's New  
Tristand is now your  
on-the-job work bench



... Trays available for  
your old model Tristand.

Legs fold in and chain  
for easy carrying. With  
new tray Tristand won't  
fold up in use.

● All your tools are ready at hand with this new RIDGID work-saver pipe vise. Tool tray keeps them in easy reach—eliminates stooping, speeds up work. New Tristand is easy to set up and take down, tray attaches in a jiffy. Legs have rubber feet to prevent "creeping." RIDGID's LonGrip tool-steel jaws have bulldog grip but are easy on polished pipe and tubing. Yoke vise, 2½" capacity; chain vise, 4". Buy the new work-saver RIDGID Tristand from your Supply House.

**RIDGID**  
WORK-SAVER PIPE TOOLS

THE RIDGE TOOL CO. • ELYRIA, OHIO

When inquiring check CP 2384 on handy form, pgs. 2-3

## Discussed in This Issue-- PROCESSES, EQUIPMENT and MATERIALS

Use this "quick-locator" when you want information on a specific type of process, equipment or material mentioned in the processing stories or the advertisements in this magazine. Everything discussed in this issue is given here, if you want more data you can write manufacturer direct . . . or turn to pages 2 and 3 and use the handy "Information Request Slip." This is a special service provided by the publisher . . . no obligation or charge, of course. The publisher contacts the proper manufacturers for you—information comes to you direct.

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# Nickel shipping drums have these 5 advantages



## 1 I.C.C. ACCEPTANCE

Built to I.C.C. Specification 5K, the nickel shipping drum pictured here is used for safe, efficient handling and shipping of phosphorus oxychloride and phosphorus trichloride.

## 4 STRENGTH AND WORKING QUALITIES

In addition to corrosion resistance, nickel possesses great mechanical strength and toughness. However, this does not mean that it is hard to fabricate. Nickel is readily bent, forged and machined. It may be welded, brazed and soldered by commonly used methods.

## 2 LIGHT WEIGHT

True weight of an average 55-gallon nickel drum is less than 125 pounds. Nickel drums are not only easier to handle, but they also enable you to save on freight charges.

## 3 CORROSION RESISTANCE

Nickel's high resistance to corrosion keeps metal pick-up low, and helps maintain product purity. That's why Nickel is so widely used in the production, handling and transportation of phosphorus compounds, caustic soda, caustic potash, phenol and other chemicals.

## 5 LONG LIFE

One company reports using the same nickel drums for handling phosphorus compounds since 1937. This is not unusual, for Nickel's unique combination of strength, toughness, assures long equipment life... and minimum maintenance expense.



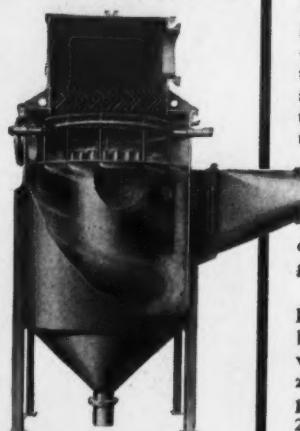
**Nickel!**

THE INTERNATIONAL NICKEL COMPANY, INC.

67 Wall Street, New York 5, N. Y.

When inquiring check CP 2385 on handy form, pgs. 2-3

## SUPPRESS DUST WITH WATER



Cutaway view showing Hydro-Clone system of blading and baffling.

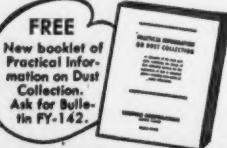
**WHITING**  
CORPORATION

15667 Lathrop Ave.  
Harvey, Illinois

and reduce every par-  
ticle to harmless sludge!

• Whiting Hydro-Clone—Type SH—precipitates heavy particles in the pre-cleaner . . . then removes the fine particles in the axial tube and disintegrator section directly above this tube. The resulting sludge drains to a dewatering tank, and water is recirculated. The water also removes obnoxious gases and dangerous fumes.

Hydro-Clone Equipment has no cloth screens or bags to clean, burn, or wear out . . . no spray nozzles to clog . . . no moving parts. Capacities from 2,000 to 30,000 cfm. Write for Bulletins FY-126 and FY-131 (low headroom type).



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## NEW PLASTIC FLOOR PATCH SETS INSTANTLY



### TAMP SMOOTH! TRUCK OVER!



Use durable INSTANT-USE . . . a tough, plastic material which you simply shovel into hole—tamp—and run traffic over immediately. NO WAITING. Bonds tight to old concrete. Makes smooth, solid, heavy-duty patch. Withstands extreme loads. Keep a drum on hand for emergencies. Immediate shipment.

Request Descriptive Folder and Trial Offer Details

## INSTANT-USE

**FLEXROCK COMPANY**  
3611 Filbert St., Philadelphia 4, Pa.

Offices in Principal Cities.

Please send me complete INSTANT-USE information and details of TRIAL ORDER PLAN—no obligation.

Name \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_



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JULY, 1949

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## "That's Interesting"

### Keeps shunt capacitors from corroding

A well-known solution to the problem of low power factor is the shunt capacitor. But shunt capacitors (along with most apparatus) have had a bad time in chemical plants, where the cases are quick to corrode.

One large chemical company found the answer in capacitors having metallized surfaces sprayed with molten zinc, a finish developed originally to resist elements encountered in outdoor distribution-line service. During trial period, results proved so satisfactory that the chemical company has gone "all out" for this type of unit. Several hundred kilovars of capacitors are being installed. ("Westinghouse Engineer", May '49—306 4th Ave., P. O. Box 1017, Pittsburgh 30, Pa.)

### Copperized chromated zinc chloride excellent wood preservative

Development of a new chemical wood preservative, Copperized Chromated Zinc Chloride, by a joint research program of Koppers Company, Inc., and E. I. du Pont de Nemours and Company, (Inc.), was announced at the April 26 meeting of the American Wood Preservers Association in St. Louis, Mo.

Tests have revealed that Copperized C.Z.C. possesses greater permanence of its toxic constituents than C.Z.C. and that the metal corrosion factor and the glow characteristics of the two products are about the same.

The new preservative, containing 73% zinc chloride, 20% sodium dichromate, and 7% cupric chloride, has proved in pilot plant treatments to be similar in handling, treating, and control of the solution equilibrium to Chromated Zinc Chloride and other salt preservatives containing more than one type of toxic ion.

Improvement of zinc chloride by the addition of sodium dichromate was first suggested by the U. S. Forest Products Laboratory. The new formulation shows excellent wood preserving qualities in accelerated service tests. The preservative has also been evaluated in pilot plant treatments.

### Slow-dissolving salt tablets

There are those who cannot tolerate plain salt tablets or salted drinking water because it causes distress and nausea. During the war, this was a problem to the Navy. Research then developed a slow-dissolving salt tablet. While it releases some salt immediately, it is not enough to cause distress.

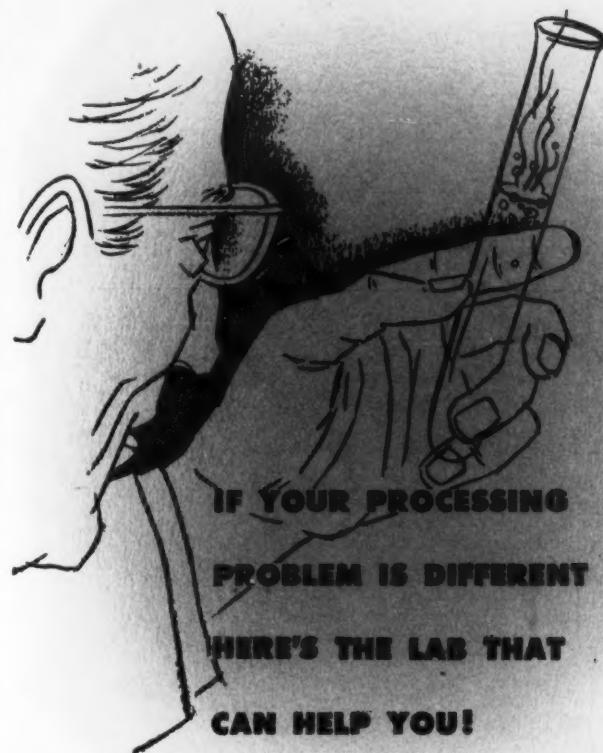
The formula is now being used in a commercially-available tablet in handy, disposable dispenser-package which attaches to wall. (Made by United States Safety Service Co., Kansas City, Mo.)

### International Joint Committee studies physcrometric data

The average man breathes in and gives out 480 cubic feet of air a day. Because of the importance of the properties of air, it has been the subject of intense study on the part of various scientific groups for many years. Scientists from both sides of the ocean attended a meeting of the International Joint Committee on Physcrometric Data at the Towne Scientific School of the University of Pennsylvania on May 12.

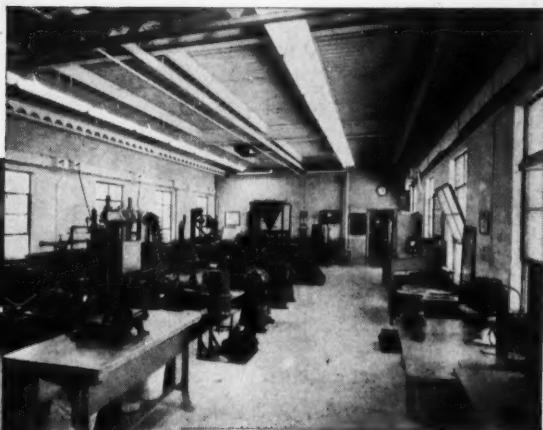
The problem of compiling authoritative data on thermodynamic properties of moist air was attacked some time ago, in systematic manner, by the ASHVE through a cooperative investigation with the Towne Scientific School. Since 1946 the ASHVE Heating, Ventilating and Air Conditioning Guide has contained two tables giving the properties of water at saturation and of moist air at standard atmospheric pressures. The range covered by the tables, which have gained general acceptance, is -160 degrees F. to 212 degrees F.

One of the objects of the committee is to extend the upper limit to 500 degrees F. The committee recognizes other needs. So far, no humidity measuring instrument has been devised sensitive enough to meet all requirements. There is a need for international agreement on terminology, numerical values and definitions. Tables are needed for dry air, water vapor and air containing water vapor, over a wide range of pressures and temperatures.



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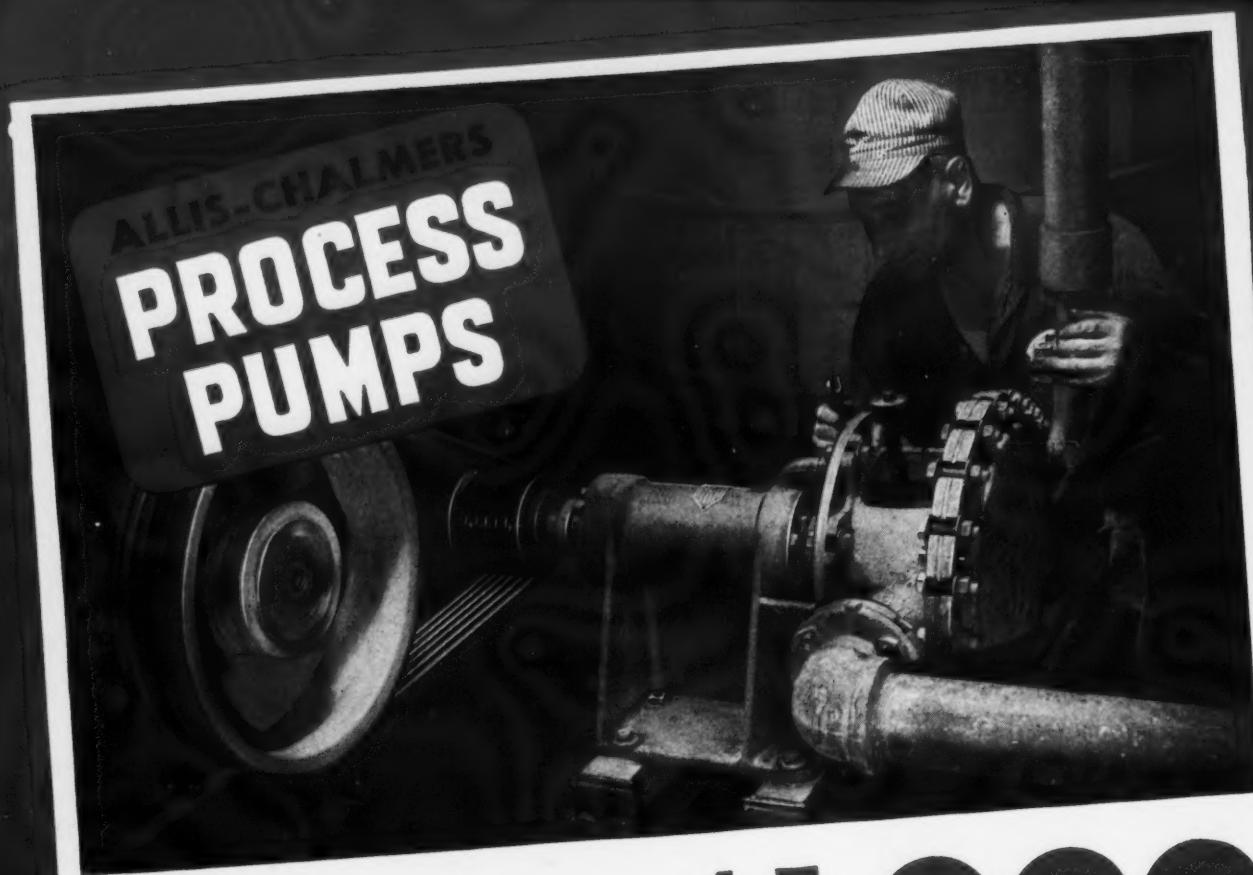


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